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Capitalization Rate Study

Property and Special Taxes Department
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Valuation Division
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Executive Summary

“The income approach to value includes any method of converting an income stream into a present value estimate (i.e., an indicator of current fair market value). The income approach is also called the capitalization approach because capitalization is the process of converting an expected income into an indicator of value.

The methods or techniques used in the income approach may be relatively simple (e.g., income or rent multipliers and direct capitalization), or more complex (e.g., various yield capitalization techniques). All of these methods are referred to as capitalization techniques because they convert an expected future income stream into a present value estimate.

The income approach requires careful application because small variations in its key variables (capitalization rate, duration of income stream, estimated income and expenses, etc.) will be mathematically leveraged into a wide range of estimated value. This is particularly true for the capitalization rate variable. The accuracy of the income approach is no greater than the validity of the assumptions used to estimate the key variables. The mathematical techniques used in the approach, while sometimes complicated, are merely tools for converting these assumptions into an estimate of current market value.”¹

I. Authority for Capitalization Rate Study

Property Tax Rule 8 (g) (2) provides the authority for the method in which the capitalization rates were developed in this study. The rule states “the capitalization rate may be developed...

By deriving a weighted average of the capitalization rates for debt and for equity capital appropriate to the California money markets (the band-of-investment method) and adding increments for expenses that are excluded from outgo because they are based on the value that is being sought or the income that is being capitalized. The appraiser shall weight the rates for debt and equity capital by the respective amounts of such capital he deems most likely to be employed by prospective purchasers.”

II. Band of Investment Approach

In its simplest form, the band of investment method assumes that a purchaser would pay cash (or equity) for a portion of the property and would borrow the balance of the purchase price. For example:

Debt	30%	x	Cost of Debt	7%	=	2.1%
Equity	70%	x	Cost of Equity	12%	=	8.4%
Weighted Average Cost of Capital						<u>10.5%</u>

¹ Assessors’ Handbook 501, Basic Appraisal, Revised January 2002

Executive Summary

This booklet contains a study for each of the eight major state assessee industry groups² in California. Industry data was compiled by groups with similar Value Line financial ratings.

Generally accepted appraisal procedures were used to estimate the cost of capital for debt and equity. The long term debt cost is the cost for a particular risk class of debt on the lien date. The equity rate reflects the rate of return or compensation that will satisfy the risk that a prospective purchaser would assume by investing in the property.

The rates derived in this study are basic capitalization rates and represent the return on investment only. Any increments required to be added by Property Tax rule 8(g)(2), such as income or ad valorem tax components are in addition to the rates listed.

A. *Capital Structure - Prospective Purchaser vs. Company Specific*

State assessees often ask why the Board does not use the current capital structure of individual companies in the band-of-investment method. As explained in Rule 8 (g)(2), the appraiser shall weight the rates of debt and equity capital by the respective amounts of such capital deemed most likely to be employed by a prospective purchaser.

Therefore, the capital structure contemplated is a representative or typical structure of an industry group of companies with a similar bond rating, not that of the present owner. The objective of doing so is to strike an optimum capital structure from the perspective of a potential investor.

B. *Company Specific Debt Rates*

In many cases the debt component of the capital structure for a prospective purchaser and the individual company being assessed may be similar. In cases where, in the judgement of staff, the debt ratings of the individual companies being assessed and the debt ratings of prospective purchasers are similar, the company-specific bond rating has been used to develop the appropriate debt component of the recommended capitalization rate.

C. *Impact of Holding Companies on Determination of Capital Structure*

Many of the larger state assessees are subsidiaries of their holding company. Stock purchases related to a subsidiary must be made through the parent holding company. Since there is no direct market data for state assessee that are subsidiaries of a holding company, staff must rely, in great part, upon market data related to the holding company.

² Gas, Electric & Water; Natural Gas Transmission; Local Exchange; Electric Generation; Interexchange; Wireless; Pipelines; Railroads

Executive Summary

III. Ex Post versus Ex Ante Risk Premium

In this study, staff calculated two separate Capital Asset Pricing Model estimates. One estimate is based on ex post (historical) risk premiums and one estimate is based on ex ante (projected) risk premiums. An ex post risk premium is based on the assumption that historical returns are the best predictor of future returns. An ex ante risk premium is forward-looking. Security analysts' estimates of future dividends and growth rates are used as a basis to estimate the expected risk premium of common stocks over government bonds.

IV. Flotation Costs

When new issues of both debt and equity capital are sold to investors, the issuing company incurs transaction costs such as underwriting fees, legal expenses, and prospectus preparation costs. These costs of issuing securities are known as flotation costs. Flotation costs effectively reduce the net proceeds that a firm will receive from issuing securities. This is much like closing costs on a home mortgage. The cost of capital is adjusted upward to reflect the flotation costs incurred to issue the securities. Since the flotation costs are reflected in the weighted average cost of capital, the flotation costs should not be allowed as expenses in projecting cash flows to be capitalized. Each basic capitalization rate in this study has been adjusted to reflect flotation costs.

V. Size Adjustment

Investors typically consider small capitalization stocks as riskier investments than large capitalization stocks. It follows that investors require additional return to take on the risk of an investment in a small capitalization stock. According to Ibbotson & Associates³, the additional risk is not reflected in the calculation of beta. Where the Capital Asset Pricing Model was relied upon in assigning the cost of capital to companies whose size is ranked in the lower deciles of the New York Stock Exchange, the size premium adjustment as reported by Ibbotson Associates in the 1999 Valuation Edition Yearbook was considered.

VI. Utilization of Assessee-Provided Studies and Data

Staff appraisers analyzed the data and capitalization rate studies submitted by assessees and, where appropriate utilized them in the development of the staff derived rates. Industry efforts and input are greatly appreciated.

The capitalization rates published in this study are intended to be applied to the unitary operations of the companies subject to assessment by the California State Board of Equalization.

³ SBBi: Valuation Edition 1999 Yearbook - Chapter 4 - Firm Size and Return

California State Board of Equalization
Valuation Division
2003 Capitalization Rate Study
Gas, Electric and Water Companies

SBE No.	Company Name	Ratings			Capital Structure			Rates of Return			Basic Cap Rate
		Financial	Preferred Stock	Bond	Common Equity	Preferred Stock	Debt	Common Equity	Preferred Stock	Debt	
Gas and Electric Companies											
141	San Diego Gas & Electric	B++	baa1	Baa1	49%	6%	45%	12.75%	7.53%	7.55%	10.10%
106	PacifiCorp	B	baa3	Baa2	48%		52%	13.30%	7.87%	7.71%	10.39%
148	Southern California Edison	B	b3	Baa2	48%	2%	50%	13.30%	8.91%	7.71%	10.42%
184	Avista Corporation	B	ba3	Baa3	48%	2%	50%	13.30%	8.39%	7.87%	10.49%
146	Sierra Pacific Power	C++	caa1	Ba2	48%	2%	50%	13.51%	9.08%	8.19%	10.76%
135	Pacific Gas & Electric	C	caa3	B3	48%	2%	50%	13.72%	9.26%	8.83%	11.18%
103	Anza Electric Cooperative	Not Rated		Not Rated	55%		45%	13.87%		8.50%	11.45%
160	Valley Electric Association	Not Rated		Not Rated	55%		45%	13.87%		8.50%	11.45%
173	Surprise Valley Electrification	Not Rated		Not Rated	55%		45%	13.87%		8.50%	11.45%
176	Plumas-Sierra Rural Electric	Not Rated		Not Rated	55%		45%	13.87%		8.50%	11.45%
185	Mountain Utilities	Not Rated		Not Rated	55%		45%	13.87%		8.50%	11.45%
193	Southwest Transmission Coop., Inc.	Not Rated		Not Rated	55%		45%	13.87%		8.50%	11.45%
Natural Gas Distribution Companies											
149	Southern California Gas	B++	baa1	A1	48%	6%	46%	11.03%	7.53%	7.17%	9.04%
152	Southwest Gas	B	baa3	Baa2	50%	5%	45%	12.52%	7.87%	7.71%	10.13%
192	Alpine Natural Gas	Not Rated		Not Rated	55%		45%	13.61%		8.50%	11.31%
194	West Coast Gas Company, Inc.	Not Rated		Not Rated	55%		45%	13.61%		8.50%	11.31%
195	Wild Goose, Inc.	Not Rated		Not Rated	55%		45%	13.61%		8.50%	11.31%
198	Lodi Gas Storage, LLC	Not Rated		Not Rated	55%		45%	13.61%		8.50%	11.31%
Water Companies											
101	Southern California Water	Not Rated		A2	44%		56%	11.82%		7.88%	9.62%

**California State Board of Equalization
Valuation Division
2003 Capitalization Rate Study
Natural Gas Transmission Companies**

SBE No.	Company Name	Ratings		Capital Structure		Rates of Return		Basic Cap Rate
		Common Equity	Bond	Common Equity	Debt	Common Equity	Debt	
180	PG&E National Energy Group	Not Rated	Not Rated	65%	35%	13.09%	7.71%	11.21%
187	Mojave Pipeline Company	Not Rated	Not Rated	65%	35%	13.09%	7.71%	11.21%
188	Kern River Gas Transmission Company	Not Rated	Not Rated	65%	35%	13.09%	7.71%	11.21%
189	Standard Pacific Gas Line, Inc.	Not Rated	Not Rated	65%	35%	13.09%	7.71%	11.21%
190	Tuscarora Gas Transmission Company	Not Rated	Not Rated	65%	35%	13.09%	7.71%	11.21%
196	Questar Southern Trails Pipeline Company	Not Rated	Not Rated	65%	35%	13.09%	7.71%	11.21%
197	El Paso Natural Pipeline Company	Not Rated	Not Rated	65%	35%	13.09%	7.71%	11.21%

**California State Board of Equalization
Valuation Division
2003 Capitalization Rate Study
Local Exchange Companies**

SBE No.	Company Name	Ratings		Capital Structure		Rates of Return		Basic Cap Rate
		Financial	Bond	Common Equity	Debt	Common Equity	Debt	
279	SBC California	A+	Aa3	75%	25%	11.26%	7.10%	10.22%
201	Verizon California Inc.	A+	Aa3	75%	25%	11.26%	7.10%	10.22%
284	CTC of California	Not Rated	Not Rated	70%	30%	12.57%	7.71%	11.11%
270	CTC of The Golden State	Not Rated	Not Rated	70%	30%	12.57%	7.71%	11.11%
311	CTC of Tuolumne	Not Rated	Not Rated	70%	30%	12.57%	7.71%	11.11%
294	Roseville Telephone Company	Not Rated	Not Rated	70%	30%	12.57%	7.71%	11.11%
	Other Local Exchange Companies	Not Rated	Not Rated	70%	30%	13.87%	8.81%	12.35%

**California State Board of Equalization
Valuation Division
2003 Capitalization Rate Study
Electric Generation Facilities**

SBE No.	Company Name	Ratings		Capital Structure		Rates of Return		Basic Cap Rate
		Financial	Bond	Common Equity	Debt	Common Equity	Debt	
	Recently Constructed Facilities¹	C++	Baa2	45%	55%	16.87%	11.13%	13.71%
	Composite Facilities²	C++	B1	45%	55%	17.78%	11.93%	14.56%
	Older Facilities³	C++	Caa1	45%	55%	19.14%	12.40%	15.43%

¹ Recently Constructed Facilities - Facilities constructed after September 1996 incorporating modern electric generation technologies at the time they were built.

² Composite Facilities - Facilities that were sold off by vertically integrated electric utilities for which replacement of some obsolete generating units with modern electric generation technologies have been made.

³ Older Facilities - Facilities that were sold off by vertically integrated electric utilities for which no replacements, other than for routine maintenance, have been made.

**California State Board of Equalization
Valuation Division
2003 Capitalization Rate Study
Interexchange Telephone Companies**

SBE No.	Company Name	Ratings		Capital Structure		Rates of Return		Basic Cap Rate
		Common Equity	Bond	Common Equity	Long Term Debt	Common Equity	Long Term Debt	
2310	AT&T Communications	Major Co.	Major Co.	65%	35%	14.14%	7.97%	11.98%
2014	Sprint Communications Co., L.P.	Major Co.	Major Co.	65%	35%	14.14%	7.97%	11.98%
2035	Cable & Wireless USA, Inc.	C+	Ba ¹	60%	40%	15.18%	8.60%	12.55%
2463	Qwest Communications Corporation	C+	Caa1	60%	40%	15.18%	8.74%	12.60%
7677	Talk.Com Holding Corporation	C+	NR	60%	40%	15.18%	9.37%	12.86%
7522	Time Warner Telecom of California, L.P.	C	B3	60%	40%	16.23%	8.60%	13.18%
7761	Level 3 Communications LLC	C	Caa3	60%	40%	16.23%	8.99%	13.33%
2043	Pac-West Telecomm, Inc.	C	Caa3	60%	40%	16.23%	8.99%	13.33%
7686	Primus Telecommunications, Inc.	C	Caa3	60%	40%	16.23%	8.99%	13.33%
7630	Broadwing Communications Services, Inc.	C	NR	60%	40%	16.23%	9.37%	13.48%
	Other Interexchange Carriers	Not Rated	Not Rated	60%	40%	18.32%	9.37%	14.74%
	Other Interexchange Resellers	Not Rated	Not Rated	60%	40%	21.47%	10.13%	16.93%

¹ The debt rate used is based on a "B3" rating. This rate is better suited to the company's California unitary interexchange telephone operations.

California State Board of Equalization
Valuation Division
2003 Capitalization Rate Study
Wireless Companies

SBE No.	Company Name	Rating	Capital Structure		Rates of Return		Basic Cap Rate
			Common Equity	Debt	Common Equity	Debt	
2502	Bay Area Cellular Telephone Comp.	NR-1	70%	30%	13.39%	7.88%	11.74%
2512	Verizon Wireless - San Diego	NR-1	70%	30%	13.39%	7.88%	11.74%
2513	Sacramento Valley Limited Partnership	NR-1	70%	30%	13.39%	7.88%	11.74%
2532	Los Angeles SMSA, Ltd.	NR-1	70%	30%	13.39%	7.88%	11.74%
2547	AB Cellular Holding, LLC	NR-1	70%	30%	13.39%	7.88%	11.74%
2559	GTE Mobilnet of California, Ltd. Pts.	NR-1	70%	30%	13.39%	7.88%	11.74%
2606	AT&T Wireless Services of CA, Inc.	NR-1	70%	30%	13.39%	7.88%	11.74%
2720	Cox Communications PCS, L.P.	NR-2	65%	35%	14.14%	8.14%	12.04%
2722	Sprint Spectrum L.P.	NR-2	65%	35%	14.14%	8.14%	12.04%
2737	Nextel of California, Inc.	NR-2	65%	35%	14.14%	8.14%	12.04%
2748	Pacific Bell Wireless LLC	NR-2	65%	35%	14.14%	8.14%	12.04%
2749	AT&T Wireless PCS, LLC	NR-2	65%	35%	14.14%	8.14%	12.04%
2755	Cingular-Southwestern Bell Mobile Svcs.	NR-2	65%	35%	14.14%	8.14%	12.04%
2756	Cingular Wireless, LLC	NR-2	65%	35%	14.14%	8.14%	12.04%
2552	Fresno MSA Limited Partnership	NR-3	60%	40%	14.75%	8.39%	12.21%
2611	Cagal Cellular Communications Corp.	NR-3	60%	40%	14.75%	8.39%	12.21%
2622	Bakersfield Cellular Telephone Comp.	NR-3	60%	40%	14.75%	8.39%	12.21%
2626	Santa Barbara Cellular Systems, Ltd.	NR-3	60%	40%	14.75%	8.39%	12.21%
2627	GTE Mobilnet of Santa Barbara, L.P.	NR-3	60%	40%	14.75%	8.39%	12.21%
2628	Napa Cellular Telephone Comp.	NR-3	60%	40%	14.75%	8.39%	12.21%
2630	Santa Cruz Cellular Telephone Comp.	NR-3	60%	40%	14.75%	8.39%	12.21%
2637	Salinas Cellular Telephone Comp.	NR-3	60%	40%	14.75%	8.39%	12.21%
2641	Visalia Cellular Telephone Comp.	NR-3	60%	40%	14.75%	8.39%	12.21%
	Other Wireless Companies	NR-4	60%	40%	17.25%	8.65%	13.81%
	Wireless Reseller Companies	NR-5	60%	40%	20.25%	9.66%	16.02%

NR-1: Companies representing large size wireless markets in California
NR-2: Companies representing predominantly large to midsize PCS markets in California
NR-3: Companies representing predominantly midsize wireless markets in California
NR-4: Other wireless carriers (including Radio Telephones)
NR-5: All wireless reseller companies

**California State Board of Equalization
Valuation Division
2003 Capitalization Rate Study
Pipeline Companies**

SBE No.	Company Name	Ratings		Capital Structure		Rates of Return		Basic Cap Rate
		Common Equity	Bond	Common Equity	Debt	Equity	Debt	
461	SFPP, L.P.	B+	Baa	65%	35%	15.11%	7.57%	12.47%
402	CALNEV Pipe Line Company	NR-1	NR-b	65%	35%	13.61%	7.57%	11.50%
465	All American Pipeline, L.P.	NR-2	NR-b	65%	35%	14.14%	7.57%	11.84%
479	Chevron Pipeline Company	NR-2	NR-b	65%	35%	14.14%	7.57%	11.84%
468	Equilon California Pipeline Company LLC	NR-2	NR-b	65%	35%	14.14%	7.57%	11.84%
486	Pacific Pipeline System, LLP	NR-2	NR-b	65%	35%	14.14%	7.57%	11.84%
480	Unocap	NR-2	NR-b	65%	35%	14.14%	7.57%	11.84%
	Other Pipeline Companies	NR-3	NR-c	65%	35%	15.18%	8.59%	12.87%

**California State Board of Equalization
Valuation Division
2003 Capitalization Rate Study
Railroads**

SBE No.	Company Name	Ratings			Capital Structure			Rates of Return			Basic Cap Rate
		Common Equity	ETC's	Bond	Common Equity	ETC's	Debt	Common Equity	ETC's	Debt	
804	Burlington Northern Santa Fe Railroad Co.	B+	A2	Baa2	66%	10%	24%	14.39%	5.18%	7.57%	11.83%
843	Union Pacific Railroad Company	B+	A2	Baa3	66%	10%	24%	14.39%	5.18%	7.78%	11.88%
802	Central Oregon and Pacific Railroad	N/R-1		N/R-1	60%		40%	16.49%		9.09%	13.53%
810	California Northern Railroad	N/R-1		N/R-1	60%		40%	16.49%		9.09%	13.53%
813	Pacific Harbor Lines	N/R-1		N/R-1	60%		40%	16.49%		9.09%	13.53%
850	Modesto and Empire Traction Company	N/R-1		N/R-1	60%		40%	16.49%		9.09%	13.53%
865	San Diego & Imperial Valley Railroad Co. Inc.	N/R-1		N/R-1	60%		40%	16.49%		9.09%	13.53%
882	Trona Railway Co.	N/R-1		N/R-1	60%		40%	16.49%		9.09%	13.53%
897	San Joaquin Valley Railroad Company	N/R-1		N/R-1	60%		40%	16.49%		9.09%	13.53%
899	Arizona & California Railroad	N/R-1		N/R-1	60%		40%	16.49%		9.09%	13.53%
	Other Railroad Companies	N/R-2		N/R-2	60%		40%	16.75%		10.11%	14.09%

**California State Board of Equalization
Valuation Division
2003 Capitalization Rate Study
Gas, Electric and Water Companies**

SBE No.	Company Name	Ratings			Capital Structure			Rates of Return			Basic Cap Rate
		Financial	Preferred Stock	Bond	Common Equity	Preferred Stock	Debt	Common Equity	Preferred Stock	Debt	
Gas and Electric Companies											
141	San Diego Gas & Electric	B++	baa1	Baa1	49%	6%	45%	12.75%	7.53%	7.55%	10.10%
106	PacifiCorp	B	baa3	Baa2	48%		52%	13.30%	7.87%	7.71%	10.39%
148	Southern California Edison	B	b3	Baa2	48%	2%	50%	13.30%	8.91%	7.71%	10.42%
184	Avista Corporation	B	ba3	Baa3	48%	2%	50%	13.30%	8.39%	7.87%	10.49%
146	Sierra Pacific Power	C++	caa1	Ba2	48%	2%	50%	13.51%	9.08%	8.19%	10.76%
135	Pacific Gas & Electric	C	caa3	B3	48%	2%	50%	13.72%	9.26%	8.83%	11.18%
103	Anza Electric Cooperative	Not Rated		Not Rated	55%		45%	13.87%		8.50%	11.45%
160	Valley Electric Association	Not Rated		Not Rated	55%		45%	13.87%		8.50%	11.45%
173	Surprise Valley Electrification	Not Rated		Not Rated	55%		45%	13.87%		8.50%	11.45%
176	Plumas-Sierra Rural Electric	Not Rated		Not Rated	55%		45%	13.87%		8.50%	11.45%
185	Mountain Utilities	Not Rated		Not Rated	55%		45%	13.87%		8.50%	11.45%
193	Southwest Transmission Coop., Inc.	Not Rated		Not Rated	55%		45%	13.87%		8.50%	11.45%
Natural Gas Distribution Companies											
149	Southern California Gas	B++	baa1	A1	48%	6%	46%	11.03%	7.53%	7.17%	9.04%
152	Southwest Gas	B	baa3	Baa2	50%	5%	45%	12.52%	7.87%	7.71%	10.13%
192	Alpine Natural Gas	Not Rated		Not Rated	55%		45%	13.61%		8.50%	11.31%
194	West Coast Gas Company, Inc.	Not Rated		Not Rated	55%		45%	13.61%		8.50%	11.31%
195	Wild Goose, Inc.	Not Rated		Not Rated	55%		45%	13.61%		8.50%	11.31%
198	Lodi Gas Storage, LLC	Not Rated		Not Rated	55%		45%	13.61%		8.50%	11.31%
Water Companies											
101	Southern California Water	Not Rated		A2	44%		56%	11.82%		7.88%	9.62%

**2003 Capitalization Rate Study
Gas, Electric and Water Companies
Industry Notes**

For 2003, capitalization rates have been developed separately for gas and electric companies, gas distribution companies, and water companies.

GAS AND ELECTRIC COMPANIES

- Gas and electric companies have undergone major changes brought about by electric deregulation. As of January 1, 2003, twenty-four states and the District of Columbia have either enacted enabling legislation or issued a regulatory order to implement retail access. California adopted deregulation in 1998. In 2001, however, the California Public Utilities Commission (CPUC) suspended direct retail access and re-imposed rate-of-return regulation on the electric generation operations of Pacific Gas & Electric Company (PG&E) and Southern California Edison Company (SCE). Since electric transmission and distribution have not been deregulated, and since other major public utilities provided only transmission and distribution services, the re-regulation of the electric generation operations of PG&E and SCE essentially returned all major electric public utilities in California to regulation. The objective of the 2003 capitalization rate study is to develop capitalization rates that reflect regulated gas and electric operations.
- In response to deregulation, the structure of many traditional gas and electric companies changed. Many companies either merged, restructured or invested in nonregulated operations. Since our capitalization rates are intended for regulated gas and electric operations, the sample companies from which the capitalization rates were derived were engaged primarily in regulated gas and electric operations. In this year's capitalization rate study, we have narrowed the sample pool of companies to those that reflect characteristics comparable to the companies we are appraising.
- Capital structures used are the CPUC authorized capital structures because the potential purchaser would likely use the capital structure that the regulatory agency would deem optimum to both the ratepayers and the utility.
- Staff developed capitalization rates using the Discounted Cash Flow (DCF) model and the Capital Asset Pricing Model (CAPM), ex-ante and ex-post, and the rates authorized by the regulatory agency. In Calculating the Basic Capitalization Rates, staff considered the capitalization rate studies submitted by PG&E and SCE, the CPUC's authorized rates of return, and the CAPM, both the ex post and ex ante risk premiums. Staff did not consider the DCF model this year because of the negative earnings growth projected by the financial reporting companies.

**2003 Capitalization Rate Study
Gas, Electric and Water Companies
Industry Notes**

GAS DISTRIBUTION COMPANIES

- There were sufficient data on comparable gas distribution companies to enable staff to develop capitalization rates using the DCF model. Staff relied completely on the DCF because regulation enables gas distribution companies to generate predictable cash flows (the premise of the DCF model).

WATER COMPANIES

- Staff relied completely on the DCF because regulation enables water companies to generate predictable cash flows (the premise of the DCF model).

**2003 Capitalization Rate Study
Gas and Electric Companies
Flotation Cost Adjustment**

Equity				Preferred Stock				Debt			
Value Line Rating	Recommended Rate	Flotation Cost in %	Adjusted Rate	Moody's Rating	Recommended Rate	Flotation Cost in %	Adjusted Rate	Moody's Rating	Recommended Rate	Flotation Cost in %	Adjusted Rate
B++	12.18%	4.50%	12.75%	baa1	7.40%	1.70%	7.53%	Aa3	6.98%	1.70%	7.10%
B	12.70%	4.50%	13.30%	baa3	7.74%	1.70%	7.87%	A3	7.27%	1.70%	7.39%
C++	12.90%	4.50%	13.51%	ba3	8.25%	1.70%	8.39%	Baa1	7.42%	1.70%	7.55%
C	13.10%	4.50%	13.72%	b3	8.76%	1.70%	8.91%	Baa2	7.58%	1.70%	7.71%
NR	13.25%	4.50%	13.87%	caa1	8.93%	1.70%	9.08%	Baa3	7.74%	1.70%	7.87%
				caa3	9.10%	1.70%	9.26%	Ba1	7.89%	1.70%	8.03%
								Ba2	8.05%	1.70%	8.19%
								B2	8.52%	1.70%	8.67%
								B3	8.68%	1.70%	8.83%

Formula - Cost of Capital Adjusted for Flotation Costs

$$\frac{k_u}{1 - f}$$

Where k_u = The cost of capital unadjusted for flotation costs

f = Flotation cost as a percentage of the value of securities issued

**2003 Capitalization Rate Study
Gas and Electric Companies
Summary of Rates of Return**

Common Equity		Preferred Stock			Bonds		
Value Line Rating	Rate of Return (1)	Moody's P/S Yields	Moody Rating	Rate of Return (2)	Moody's Bond Yields	Moody Rating	Rate of Return (2)
			aa1	6.47%	Aaa=NA	Aaa2	6.58%
B++	12.18%	aa=6.62%	aa2	6.62%		Aaa3	6.69%
B	12.70%		aa3	6.77%		Aa1	6.80%
C++	12.90%		a1	6.91%	Aa=6.91%	Aa2	6.91%
C	13.10%	a=7.06%	a2	7.06%		Aa3	6.98%
NR	13.25%		a3	7.23%		A1	7.04%
	(3)		baa1	7.40%	A=7.11%	A2	7.11%
		baa=7.57%	baa2	7.57%		A3	7.27%
			baa3	7.74%		Baa1	7.42%
			ba1	7.91%	Baa=7.58%	Baa2	7.58%
			ba2	8.08%		Baa3	7.74%
			ba3	8.25%		Ba1	7.89%
			b1	8.42%		Ba2	8.05%
			b2	8.59%		Ba3	8.21%
			b3	8.76%		B1	8.36%
			caa1	8.93%		B2	8.52%
			caa3	9.10%		B3	8.68%

- Notes:
- (1) The Rate of Return on Common Equity was developed by staff based on the relative risk of the utilities in conjunction with the results of the various financial models and pertinent information from various sources.
 - (2) Rates of Return on Preferred Stocks and Bonds were based on Moody's "Utility Preferred Stock Yields" as of December 2002 and "Utility Bond Yields" as of January 3, 2003. However, because Moody assigns a yield to the groups Aaa, Aa, A and Baa for bonds; and aa, a, and baa for preferred stocks, the staff interpolates the difference between these groups in order to achieve a further refinement of the ratings.
 - (3) For companies whose common equity are not rated (NR), staff judgment is used in assigning the rates of return because the circumstances or reasons for not rating the common equity are different for each company.

**2003 Capitalization Rate Study
Gas and Electric Companies
Capital Asset Pricing Model - Ex Ante**

Component	Value Line Ratings		
	A++, A+	B++, B+, B	C++, C+
Expected Future Return, S&P 500	13.52%	13.52%	13.52%
Less: Risk Free Return 25 - 30 Year Treasury Bonds ¹	4.87%	4.87%	4.87%
Risk Premium	8.65%	8.65%	8.65%
Beta ²	0.60	0.65	0.80
Adjusted Risk Premium	5.19%	5.62%	6.92%
Risk Free Return 25 - 30 Year Treasury Bonds ¹	4.87%	4.87%	4.87%
Projected Return on Common Equity	10.06%	10.49%	11.79%

¹ Wall Street Journal 12/31/02 data

² The estimated betas are based on the gas and electric beta analysis.

2003 Capitalization Rate Study
Gas and Electric Companies
Capital Asset Pricing Model - Ex Post

Component	Value Line Ratings		
	A++, A+	B++, B+, B	C++, C+
Common Stock Return (1926 - 2002) ¹	12.20%	12.20%	12.20%
Less: Long Term Government Bonds ¹	5.20%	5.20%	5.20%
Risk Premium	7.00%	7.00%	7.00%
Beta ²	0.60	0.65	0.80
Adjusted Risk Premium	4.20%	4.55%	5.60%
Risk Free Return 25 - 30 Year Treasury Bonds ³	4.87%	4.87%	4.87%
Projected Return on Common Equity	9.07%	9.42%	10.47%

¹ Ibbotson Associates Study

² The estimated betas are based on the gas and electric beta analysis.

³ Wall Street Journal 12/31/02 data

2003 Capitalization Rate Study
Gas and Electric Companies
Equity Rates

a	b	c	d	e	f	g	h	i	j	k	l	m
Value Line Rating	Company Name	Stock Price 12/31/02	Est. 2003 Earnings	2002 Earnings	2002 Dividends	Est. 2003 Dividends	Dividend Yield (g/c)	Est. Dividends Growth	Est. Earnings Growth	E/P Ratio (d/c)	DvYld+ DvGrth (h+i)	DvYld+ ErngsGr (h+j)
A++	Consolidated Edison	42.82	3.20	3.10	2.22	2.24	5.23%	1.00%	3.02%	7.47%	6.23%	8.25%
A+	Ameren	41.57	2.90	3.05	2.54	2.54	6.11%	0.50%	2.71%	6.98%	6.61%	8.82%
A+	CH Energy Group	46.63	2.80	2.30	2.16	2.16	4.63%	0.50%	1.50%	6.00%	5.13%	6.13%
	Mean						5.32%	0.67%	2.41%	6.82%	5.99%	7.74%
	Median						5.23%	0.50%	2.71%	6.98%	6.23%	8.25%
	Weighted Average										6.33%	8.38%

Source: Columns a,b,d,e,f,g and i were extracted from Value Line.

Source: Column j represents the average estimated earnings growth extracted from Value Line, Zacks.com and Thomson FN First Call.com.

Source: Column c was extracted from Yahoo Finance and represents 12/31/02 closing stock prices.

**2003 Capitalization Rate Study
Gas and Electric Companies
Equity Rates**

a	b	c	d	e	f	g	h	i	j	k	l	m
Value Line Rating	Company Name	Stock Price 12/31/02	Est. 2003 Earnings	2002 Earnings	2002 Dividends	Est. 2003 Dividends	Dividend Yield (g/c)	Est. Dividends Growth	Est. Earnings Growth	E/P Ratio (d/c)	DvYld+ DvGrth (h+i)	DvYld+ ErngsGr (h+j)
B++	Energy East	22.09	1.90	1.30	0.96	1.00	4.53%	4.00%	4.67%	8.60%	8.53%	9.20%
B++	Sempra Energy	23.65	2.70	2.65	1.00	1.00	4.23%	-3.00%	6.99%	11.42%	1.23%	11.22%
B+	Cleco Corporation	14.00	1.80	1.45	0.90	0.92	5.30%	2.50%	5.67%	12.86%	7.80%	10.97%
B+	Empire District	18.20	1.45	1.25	1.28	1.28	7.03%	0.00%	7.22%	7.97%	7.03%	14.26%
B+	Puget Energy, Inc.	22.05	1.75	1.22	1.21	1.00	4.54%	-7.00%	4.60%	7.94%	-2.46%	9.14%
B	Avista Corporation	11.56	0.90	0.70	0.48	0.48	4.15%	0.50%	5.13%	7.79%	4.65%	9.29%
	Mean						4.96%	-0.50%	5.71%	9.43%	4.46%	10.68%
	Median						4.53%	0.25%	5.40%	8.28%	5.84%	10.13%
	Weighted Average										2.93%	10.31%

Source: Columns a,b,d,e,f,g and i were extracted from Value Line.

Source: Column j represents the average estimated earnings growth extracted from Value Line, Zacks.com and Thomson FN First Call.com.

Source: Column c was extracted from Yahoo Finance and represents 12/31/02 closing stock prices.

2003 Capitalization Rate Study
Gas and Electric Companies
Equity Rates

a	b	c	d	e	f	g	h	i	j	k	l	m
Value Line Rating	Company Name	Stock Price 12/31/02	Est. 2003 Earnings	2002 Earnings	2002 Dividends	Est. 2003 Dividends	Dividend Yield (g/c)	Est. Dividends Growth	Est. Earnings Growth	E/P Ratio (d/c)	DvYld+ DvGrth (h+i)	DvYld+ ErngsGr (h+j)
C++	Edison International	11.85	1.75	1.90	0.00	0.00	0.00%	-15.00%	6.17%	14.77%	-15.00%	6.17%
C++	Sierra Pacific	6.50	0.55	-3.00	0.20	0.00	0.00%	-21.50%	4.23%	8.46%	-21.50%	4.23%
C	PG&E Corporation	13.90	NMF	NMF	NMF		0.00%		6.00%		0.00%	6.00%
	Mean						0.00%	-18.25%	5.47%	11.61%	-12.17%	5.47%
	Median						0.00%	-18.25%	6.00%	11.61%	-15.00%	6.00%
	Weighted Average										-7.50%	5.95%

Source: Columns a,b,d,e,f,g and i were extracted from Value Line.

Source: Column j represents the average estimated earnings growth extracted from Value Line, Zacks.com and Thomson FN First Call.com.

Source: Column c was extracted from Yahoo Finance and represents 12/31/02 closing stock prices.

**2003 Capitalization Rate Study
Gas and Electric Companies
Long Term Earnings Growth**

a	b	c	d	e	f
Value Line Rating	Company Name	Value Line	Zacks	Thomson	Average
A++	Consolidated Edison	2.00%	3.38%	3.68%	3.02%
A+	Ameren	0.50%	4.01%	3.63%	2.71%
A+	CH Energy Group	1.50%	NA	NA	1.50%
B++	Energy East	2.00%	5.40%	6.61%	4.67%
B++	Sempra Energy	7.50%	6.25%	7.22%	6.99%
B+	Cleco Corporation	6.50%	3.00%	7.50%	5.67%
B+	Empire District	9.50%	6.50%	5.67%	7.22%
B+	Puget Energy, Inc.	2.00%	6.00%	5.80%	4.60%
B	Avista Corp.	3.50%	4.50%	7.40%	5.13%
C++	Edison International	NMF	4.67%	7.67%	6.17%
C++	Sierra Pacific	NMF	3.75%	4.70%	4.23%
C	PG&E Corp.	NMF	5.33%	6.67%	6.00%
Mean		3.89%	4.80%	6.05%	4.83%
Median		2.00%	4.67%	6.61%	4.90%

**2003 Capitalization Rate Study
Gas and Electric Companies
Capital Structure**

a	b	c	d	e	f	g	h	i	j	k	l	m
Value Line Rating	Company Name	Common Stock Outstanding	Common Stock Price 12/31/02	Mkt Value Equity (\$millions)	L.T. Debt (\$millions)	Pfd Stock (\$millions)	Common Equity (\$millions)	Total Capital (\$millions)	L.T. Debt %	Pfd Stock %	Common Equity %	Debt Equity ratio
A++	Consolidated Edison	213,144,081	42.82	9,126.83	5,935.00	249.60	9,126.83	15,311.43	39%	2%	60%	0.63
A+	Ameren	153,613,096	41.57	6,385.70	3,484.00	194.20	6,385.70	10,063.90	35%	2%	63%	0.53
A+	CH Energy Group	16,180,600	46.63	754.50	269.90	33.50	754.50	1,057.90	26%	3%	71%	0.34
	Mean								33%	2%	65%	0.50
	Median								35%	2%	63%	
	Weighted Average								37%	2%	62%	

Source: Columns a,b,c,f and g were extracted from Value Line.

Source: Column d was extracted from Yahoo Finance and represents 12/31/02 closing stock prices.

**2003 Capitalization Rate Study
Gas and Electric Companies
Capital Structure**

a	b	c	d	e	f	g	h	i	j	k	l	m
Value Line Rating	Company Name	Common Stock Outstanding	Common Stock Price 12/31/02	Mkt Value Equity (\$millions)	L.T. Debt (\$millions)	Pfd Stock (\$millions)	Common Equity (\$millions)	Total Capital (\$millions)	L.T. Debt %	Pfd Stock %	Common Equity %	Debt Equity ratio
B++	Energy East	144,741,409	22.09	3,197.34	3,941.80	115.50	3,197.34	7,254.64	54%	2%	44%	1.19
B++	Sempra Energy	204,838,575	23.65	4,844.43	4,102.00	204.00	4,844.43	9,150.43	45%	2%	53%	0.81
B+	Cleco Corporation	47,033,446	14.00	658.47	890.50	26.60	658.47	1,575.57	57%	2%	42%	1.30
B+	Empire District	22,525,592	18.20	409.97	358.90	0.00	409.97	768.87	47%	0%	53%	0.88
B+	Puget Energy, Inc.	87,543,312	22.05	1,930.33	2,497.50	103.20	1,930.33	4,531.03	55%	2%	43%	1.23
B	Avista Corporation	47,845,628	11.56	553.10	1,084.60	35.00	553.10	1,672.70	65%	2%	33%	1.84
	Mean								54%	2%	45%	1.21
	Median								55%	2%	43%	
	Weighted Average								52%	2%	46%	

Source: Columns a,b,c,f and g were extracted from Value Line.

Source: Column d was extracted from Yahoo Finance and represents 12/31/02 closing stock prices.

**2003 Capitalization Rate Study
Gas and Electric Companies
Capital Structure**

a	b	c	d	e	f	g	h	i	j	k	l	m
Value Line Rating	Company Name	Common Stock Outstanding	Common Price 12/31/02	Mkt Value Equity (\$millions)	L.T. Debt (\$millions)	Pfd Stock (\$millions)	Common Equity (\$millions)	Total Capital (\$millions)	L.T. Debt %	Pfd Stock %	Common Equity %	Debt Equity ratio
C++	Edison International	325,811,206	11.85	3,860.86	12,947.47	1,340.00	3,860.86	18,148.33	71%	7%	21%	2.49
C++	Sierra Pacific	102,133,074	6.50	663.86	2,915.74	50.00	663.86	3,629.60	80%	1%	18%	4.08
C	PG&E Corporation	366,898,285	13.90	5,099.89	8,813.87	480.00	5,099.89	14,393.76	61%	3%	35%	1.58
	Mean								71%	4%	25%	2.72
	Median								71%	3%	21%	
	Weighted Average								68%	5%	27%	

Source: Columns a,b,c,f and g were extracted from Value Line. Long term debt was discounted to reflect market value.

Source: Column d was extracted from Yahoo Finance and represents 12/31/02 closing stock prices.

**2003 Capitalization Rate Study
Gas and Electric Companies
Beta Analysis**

a	b	c	d	e	f	g	h	i
Value Line Rating	Company Name	Value Line Beta	Zacks Beta	Standard & Poor's Beta	Average Beta	Debt Equity Ratio	Unlevered Beta ¹	WTG Avg Debt/Equity Ratio
A++	Consolidated Edison	0.55	-0.13	-0.12	0.10	0.63	0.40	0.37
A+	Ameren	0.60	0.04	0.04	0.23	0.53	0.46	0.20
A+	CH Energy Group	0.70	NMF	0.14	0.42	0.34	0.58	0.01
	Mean	0.62	NMF	0.02	0.25	0.50	0.48	0.19
	Median	0.60	NMF	0.04	0.23		0.46	
	Weighted				0.16		0.43	
	Relevered Beta based on 48% Debt Capital Structure and mean Unlevered Beta						0.74 ¹	
	Relevered Beta based on 48% Debt Capital Structure and a weighted average Unlevered Beta						0.66 ²	

Formulas:

1 Unlevered Beta = Value Line Beta/[1+(1-t)(D/E)]

2 Relevered Beta = [Unlevered Beta][1+(1-t)(D/E)]

Where: D/E is the debt to equity ratio

t is the tax rate (assumed to be 40%)

Source: Columns a,b,c were extracted from Value Line.

Source: Column d was extracted from Zacks.com.

Source: Column e was extracted from Standard and Poor's Stock Reports.

Source: Column g was extracted from capital structure worksheet included in the 2003 Capitalization Rate Study.

2003 Capitalization Rate Study
Gas and Electric Companies
Beta Analysis

a	b	c	d	e	f	g	h	i
Value Line		Value	Zacks	Standard	Average	Debt	Unlevered	WTG Avg
Rating	Company Name	Line	Beta	& Poor's	Beta	Equity	Beta ¹	Debt/Equity
		Beta	Beta	Beta	Beta	Ratio		Ratio
B++	Energy East	0.65	0.21	0.21	0.36	1.19	0.38	0.48
B++	Sempra Energy	0.70	0.12	0.11	0.31	0.81	0.47	0.41
B+	Cleco Corporation	0.85	0.40	0.41	0.55	1.30	0.48	0.11
B+	Empire District	0.60	-0.02	-0.01	0.19	0.88	0.39	0.04
B+	Puget Energy, Inc.	0.60	0.06	0.06	0.24	1.23	0.35	0.31
B	Avista Corporation	0.65	0.40	0.42	0.49	1.84	0.31	0.17
	Mean	0.68	0.20	0.20	0.36	1.21	0.40	0.25
	Median	0.65	0.17	0.16	0.31		0.39	
	Weighted				0.33		0.41	

Relevered Beta based on 48% Debt Capital Structure and mean Unlevered Beta 0.62 ¹
Relevered Beta based on 48% Debt Capital Structure and a weighted average Unlevered Beta 0.63 ²

Formulas:

1 Unlevered Beta = Value Line Beta/[1+(1-t)(D/E)]

2 Rellevered Beta = [Unlevered Beta][1+(1-t)(D/E)]

Where: D/E is the debt to equity ratio

t is the tax rate (assumed to be 40%)

Source: Columns a,b,c were extracted from Value Line.

Source: Column d was extracted from Zacks.com.

Source: Column e was extracted from Standard and Poor's Stock Reports.

Source: Column g was extracted from capital structure worksheet included in the 2003 Capitalization Rate Study.

**2003 Capitalization Rate Study
Gas and Electric Companies
Beta Analysis**

a	b	c	d	e	f	g	h	i
Value Line Rating	Company Name	Value Line Beta	Zacks Beta	Standard & Poor's Beta	Average Beta	Debt Equity Ratio	Unlevered Beta ¹	WTG Avg Debt/Equity Ratio
C++	Edison International	0.80	NMF	NMF	0.80	2.49	0.32	1.25
C++	Sierra Pacific	0.85	0.50	0.48	0.61	4.08	0.25	0.41
C	PG&E Corporation	0.80	0.10	0.06	0.32	1.58	0.41	0.63
	Mean	0.82	0.30	0.27	0.58	2.72	0.33	0.76
	Median	0.80	0.30	0.27	0.61		0.32	
	Weighted				0.59		0.35	

Relevered Beta based on 48% Debt Capital Structure and mean Unlevered Beta 0.51 ¹

Relevered Beta based on 48% Debt Capital Structure and a weighted average Unlevered Beta 0.54 ²

Formulas:

1 Unlevered Beta = Value Line Beta/[1+(1-t)(D/E)]

2 Relevered Beta = [Unlevered Beta][1+(1-t)(D/E)]

Where: D/E is the debt to equity ratio

t is the tax rate (assumed to be 40%)

Source: Columns a,b,c were extracted from Value Line.

Source: Column d was extracted from Zacks.com.

Source: Column e was extracted from Standard and Poor's Stock Reports.

Source: Column g was extracted from capital structure worksheet included in the 2003 Capitalization Rate Study.

**2003 Capitalization Rate Study
Natural Gas Distribution Companies
Flotation Cost Adjustment**

Equity				Preferred Stock				Debt			
Value Line Rating	Recommended Rate	Flotation Cost in %	Adjusted Rate	Moody's Rating	Recommended Rate	Flotation Cost in %	Adjusted Rate	Moody's Rating	Recommended Rate	Flotation Cost in %	Adjusted Rate
A, B++	10.53%	4.50%	11.03%	baa1	7.40%	1.70%	7.53%	A1	7.04%	1.70%	7.17%
B+, B	11.96%	4.50%	12.52%	baa3	7.74%	1.70%	7.87%	Baa2	7.58%	1.70%	7.71%
NR	13.00%	4.50%	13.61%								

**2003 Capitalization Rate Study
Natural Gas Distribution Companies
Summary of Rates of Return**

Common Equity		Preferred Stock			Bonds		
Value Line Rating	Rate of Return (1)	Moody's P/S Yields	Moody Rating	Rate of Return (2)	Moody's Bond Yields	Moody Rating	Rate of Return (2)
A, B++	10.53%	aa=6.62%	aa1	6.47%	Aaa=NA	Aaa2	6.58%
			aa2	6.62%		Aaa3	6.69%
			aa3	6.77%		Aa1	6.80%
B+, B	11.96%	a=7.06%	a1	6.91%	Aa=6.91%	Aa2	6.91%
			a2	7.06%		Aa3	6.98%
			a3	7.23%		A1	7.04%
NR (3)	13.00%	baa=7.57%	baa1	7.40%	A=7.11%	A2	7.11%
			baa2	7.57%		A3	7.27%
			baa3	7.74%		Baa1	7.42%
					Baa=7.58%	Baa2	7.58%
						Baa3	7.74%
						Ba1	7.89%
						Ba2	8.05%
						Ba3	8.21%

- Notes:
- (1) The Rate of Return on Common Equity was developed by staff based on the relative risk of the utilities in conjunction with the results of the various financial models and pertinent information from various sources.
 - (2) Rates of Return on Preferred Stocks and Bonds were based on Moody's "Utility Preferred Stock Yields" as of December 2002 and "Utility Bond Yields" as of January 3, 2003. However, because Moody assigns a yield to the groups Aaa, Aa, A and Baa for bonds; and aa, a, and baa for preferred stocks, the staff interpolates the difference between these groups in order to achieve a further refinement of the ratings.
 - (3) For companies whose common equity are not rated (NR), staff judgment is used in assigning the rates of return because the circumstances or reasons for not rating the common equity are different for each company.

2003 Capitalization Rate Study
Natural Gas Distribution Companies
Capital Asset Pricing Model - Ex Ante

Component	Value Line Ratings			
	A	B++	B+	B
Expected Future Return, S&P 500	13.52%	13.52%	13.52%	13.52%
Less: Risk Free Return 25 - 30 Year Treasury Bonds ¹	4.87%	4.87%	4.87%	4.87%
Risk Premium	8.65%	8.65%	8.65%	8.65%
Beta ²	0.70	0.70	0.70	0.70
Adjusted Risk Premium	6.06%	6.06%	6.06%	6.06%
Risk Free Return 25 - 30 Year Treasury Bonds ¹	4.87%	4.87%	4.87%	4.87%
Projected Return on Common Equity	10.93%	10.93%	10.93%	10.93%

¹ Wall Street Journal 12/31/02 data

² The estimated betas are based on the natural gas distribution beta analysis.

2003 Capitalization Rate Study
Natural Gas Distribution Companies
Capital Asset Pricing Model - Ex Post

Component	Value Line Ratings			
	A	B++	B+	B
Common Stock Return (1926 - 2002) ¹	12.20%	12.20%	12.20%	12.20%
Less: Long Term Government Bonds ¹	5.20%	5.20%	5.20%	5.20%
Risk Premium	7.00%	7.00%	7.00%	7.00%
Beta ²	0.70	0.70	0.70	0.70
Adjusted Risk Premium	4.90%	4.90%	4.90%	4.90%
Risk Free Return 25 - 30 Year Treasury Bonds ³	4.87%	4.87%	4.87%	4.87%
Projected Return on Common Equity	9.77%	9.77%	9.77%	9.77%

¹ Ibbotson Associates Study

² The estimated betas are based on the natural gas distribution beta analysis.

³ Wall Street Journal 12/31/02 data

2003 Capitalization Rate Study
Natural Gas Distribution Companies
Equity Rates

a	b	c	d	e	f	g	h	i	j	k	l	m
Value Line Rating	Company Name	Stock Price 12/31/02	Est. 2003 Earnings	2002 Earnings	2002 Dividends	Est. 2003 Dividends	Dividend Yield (g/c)	Est. Dividends Growth	Est. Earnings Growth	E/P Ratio (d/c)	DvYld+ DvGrth (h+i)	DvYld+ ErngsGr (h+j)
A	Peoples Energy	38.65	2.75	2.80	2.08	2.12	5.49%	2.00%	5.28%	7.12%	7.49%	10.76%
A	WGL Holdings	23.92	1.75	1.14	1.27	1.28	5.35%	1.00%	4.63%	7.32%	6.35%	9.98%
B++	AGL Resources	24.30	1.85	1.75	1.08	1.08	4.44%	0.00%	7.43%	7.61%	4.44%	11.88%
B++	Energen Corp.	29.10	2.15	1.85	0.71	0.73	2.51%	NMF	7.00%	7.39%	2.51%	9.51%
B++	Laclede Gas	24.20	1.65	1.18	1.34	1.34	5.54%	3.50%	5.00%	6.82%	9.04%	10.54%
B++	New Jersey Resources	31.59	2.25	2.09	1.20	1.24	3.93%	2.00%	7.33%	7.12%	5.93%	11.25%
B++	Northwest Natural Gas Co.	27.06	1.85	1.70	1.26	1.27	4.69%	1.50%	5.58%	6.84%	6.19%	10.27%
B++	Piedmont Natural Gas	35.35	2.15	1.89	1.60	1.68	4.75%	4.00%	5.17%	6.08%	8.75%	9.92%
B++	South Jersey Industries	33.02	2.60	2.43	1.50	1.54	4.66%	1.50%	5.33%	7.87%	6.16%	10.00%
	Mean						4.60%	1.94%	5.86%	7.13%	6.32%	10.46%
	Median						4.69%	1.75%	5.33%	7.12%	6.19%	10.27%
	Weighted Average										6.18%	10.53%

Source: Columns a,b,d,e,f and g were extracted from the December 20, 2002 Value Line.

Source: Column j represents the average estimated earnings growth extracted from Value Line, Zacks.com and Thomson FN First Call.com.

Source: Column c was extracted from Yahoo Finance and represents 12/31/02 closing stock prices.

2003 Capitalization Rate Study
Natural Gas Distribution Companies
Equity Rates

a	b	c	d	e	f	g	h	i	j	k	l	m
Value Line Rating	Company Name	Stock Price 12/31/02	Est. 2003 Earnings	2002 Earnings	2002 Dividends	Est. 2003 Dividends	Dividend Yield (g/c)	Est. Dividends Growth	Est. Earnings Growth	E/P Ratio (d/c)	DvYld+ DvGrth (h+i)	DvYld+ ErngsGr (h+j)
B+	Atmos Energy Corp.	23.32	1.55	1.45	1.18	1.20	5.15%	2.50%	7.95%	6.65%	7.65%	13.10%
B+	NUI Corp.	17.26	1.40	1.08	0.98	0.98	5.68%	0.50%	5.00%	8.11%	6.18%	10.68%
B	Cascade Natural Gas	20.00	1.30	1.13	0.96	0.96	4.80%	0.50%	4.78%	6.50%	5.30%	9.58%
B	Semco Energy	6.10	0.75	0.62	0.59	0.30	4.92%	-5.00%	7.67%	12.30%	-0.08%	12.58%
B	Southern Union Co.	16.50	1.05	0.64	0.00	0.00	0.00%	0.00%	10.83%	6.36%	0.00%	10.83%
B	Southwest Gas Co.	23.45	1.60	1.40	0.82	0.82	3.50%	1.00%	7.11%	6.82%	4.50%	10.61%
B	UGI Corporation	37.39	3.05	2.70	1.63	1.68	4.49%	3.50%	9.21%	8.16%	7.99%	13.70%
	Mean						4.08%	0.43%	7.51%	7.84%	4.50%	11.58%
	Median						4.80%	0.50%	7.67%	6.82%	5.30%	10.83%
	Weighted Average										5.11%	11.96%

Source: Columns a,b,d,e,f and g were extracted from the December 20, 2002 Value Line.

Source: Column j represents the average estimated earnings growth extracted from Value Line, Zacks.com and Thomson FN First Call.com.

Source: Column c was extracted from Yahoo Finance and represents 12/31/02 closing stock prices.

**2003 Capitalization Rate Study
Natural Gas Distribution Companies
Long Term Earnings Growth**

a	b	c	d	e	f
Value Line Rating	Company Name	Zacks	Thomson FN	Value Line	Average
A	Peoples Energy	4.33%	5.50%	6.00%	5.28%
A	WGL Holdings	4.00%	4.40%	5.50%	4.63%
B++	AGL Resources	5.80%	7.00%	9.50%	7.43%
B++	Energen Corp.	7.00%	7.00%	NMF	7.00%
B++	Laclede Gas	3.50%	3.00%	8.50%	5.00%
B++	New Jersey Resources	5.81%	6.67%	9.50%	7.33%
B++	Northwest Natural Gas Co.	4.56%	5.67%	6.50%	5.58%
B++	Piedmont Natural Gas	4.50%	4.50%	6.50%	5.17%
B++	South Jersey Industries	5.50%	5.00%	5.50%	5.33%
B+	Atmos Energy Corp.	6.14%	6.71%	11.00%	7.95%
B+	NUI Corp.	4.67%	5.33%	5.00%	5.00%
B	Cascade Natural Gas	4.33%	4.00%	6.00%	4.78%
B	Semco Energy	3.00%	4.50%	15.50%	7.67%
B	Southern Union Co.	9.00%	7.00%	16.50%	10.83%
B	Southwest Gas Co.	5.33%	5.00%	11.00%	7.11%
B	UGI Corporation	6.75%	6.88%	14.00%	9.21%
	Mean	5.26%	5.51%	9.10%	6.58%
	Median	5.00%	5.42%	8.50%	6.29%
	Weighted Average				6.97%

Source: Column a was extracted from the December 20, 2002 Value Line

2003 Capitalization Rate Study
Natural Gas Distribution Companies
Capital Structure

a	b	c	d	e	f	g	h	i	j	k	l	m
Value Line Rating	Company Name	Common Stock Outstanding	Common Stock Price 12/31/02	Mkt Value Equity (\$millions)	L.T. Debt (\$millions)	Pfd Stock (\$millions)	Common Equity (\$millions)	Total Capital (\$millions)	L.T. Debt %	Pfd Stock %	Common Equity %	Debt Equity ratio
A	Peoples Energy	35,459,006	38.65	1,370.49	644.00	0.00	1,370.49	2,014.49	32%	0%	68%	0.47
A	WGL Holdings	48,565,000	23.92	1,161.67	668.00	28.20	1,161.67	1,857.87	36%	2%	63%	0.56
B++	AGL Resources	56,313,165	24.30	1,368.41	1,022.50	0.00	1,368.41	2,390.91	43%	0%	57%	0.75
B++	Energen Corp.	34,634,508	29.10	1,007.86	522.90	0.00	1,007.86	1,530.76	34%	0%	66%	0.52
B++	Laclede Gas	18,877,987	24.20	456.85	259.50	1.30	456.85	717.65	36%	0%	64%	0.57
B++	New Jersey Resources	26,884,004	31.59	849.27	418.20	0.30	849.27	1,267.77	33%	0%	67%	0.49
B++	Northwest Natural Gas Co.	25,536,463	27.06	691.02	446.00	33.00	691.02	1,170.02	38%	3%	59%	0.62
B++	Piedmont Natural Gas	32,957,316	35.35	1,165.04	462.00	0.00	1,165.04	1,627.04	28%	0%	72%	0.40
B++	South Jersey Industries	12,166,729	33.02	401.75	288.40	1.70	401.75	691.85	42%	0%	58%	0.71
	Mean								35.8%	0.5%	63.7%	0.56
	Median								36.0%	0.0%	63.7%	
	Weighted Average								35.7%	0.5%	63.9%	

Source: Columns a,b,c, f and g were extracted from the December 20, 2002 Value Line.

Source: Column d was extracted from Yahoo Finance and represents 12/31/02 closing stock prices.

2003 Capitalization Rate Study
Natural Gas Distribution Companies
Capital Structure

a	b	c	d	e	f	g	h	i	j	k	l	m
Value Line Rating	Company Name	Common Stock Outstanding	Common Stock Price 12/31/02	Mkt Value Equity (\$millions)	L.T. Debt (\$millions)	Pfd Stock (\$millions)	Common Equity (\$millions)	Total Capital (\$millions)	L.T. Debt %	Pfd Stock %	Common Equity %	Debt Equity ratio
B+	Atmos Energy Corp.	41,519,759	23.32	968.24	675.80	0.00	968.24	1,644.04	41%	0%	59%	0.70
B+	NUI Corp.	15,763,049	17.26	272.07	312.20	0.00	272.07	584.27	53%	0%	47%	1.15
B	Cascade Natural Gas	11,045,095	20.00	220.90	165.00	0.00	220.90	385.90	43%	0%	57%	0.75
B	Semco Energy	18,577,930	6.10	113.33	505.30	0.00	113.33	618.63	82%	0%	18%	4.46
B	Southern Union Co.	55,549,034	16.50	916.56	1,149.10	0.00	916.56	2,065.66	56%	0%	44%	1.25
B	Southwest Gas Co.	33,204,416	23.45	778.64	1,098.80	60.00	778.64	1,937.44	57%	3%	40%	1.31
B	UGI Corporation	27,567,343	37.39	1,030.74	1,169.30	0.00	1,030.74	2,200.04	53%	0%	47%	1.13
	Mean								55%	0%	45%	1.54
	Median								53%	0%	47%	
	Weighted Average								54%	1%	46%	

Source: Columns a,b,c, f and g were extracted from the December 20, 2002 Value Line.

Source: Column d was extracted from Yahoo Finance and represents 12/31/02 closing stock prices.

**2003 Capitalization Rate Study
Natural Gas Distribution Companies
Beta Analysis**

a	b	c	d	e	f	g	h	i
Value Line Rating	Company Name	Value Line Beta	Zacks Beta	Standard & Poor's Beta	Average Beta	Debt Equity Ratio	Unlevered Beta ¹	WTG Avg Debt/Equity Ratio
A	Peoples Energy	0.75	-0.04	-0.03	0.23	0.47	0.59	0.12
A	WGL Holdings	0.65	0.15	0.20	0.33	0.56	0.49	0.13
B++	AGL Resources	0.75	0.23	0.26	0.41	0.75	0.52	0.23
B++	Energen Corp.	0.75	0.24	0.27	0.42	0.52	0.57	0.10
B++	Laclede Gas	0.60	0.02	0.02	0.21	0.57	0.45	0.05
B++	New Jersey Resources	0.65	0.09	0.15	0.30	0.49	0.50	0.08
B++	Northwest Natural Gas Co.	0.60	-0.09	0.01	0.17	0.62	0.44	0.09
B++	Piedmont Natural Gas	0.70	0.10	0.19	0.33	0.40	0.57	0.08
B++	South Jersey Industries	0.50	0.13	0.17	0.27	0.71	0.35	0.06
	Mean	0.66	0.09	0.14	0.30	0.56	0.50	0.11
	Median	0.65	0.10	0.17	0.30		0.50	
	Weighted				0.31		0.51	
	Relevered Beta based on 50% Debt Capital Structure and mean Unlevered Beta					0.79	¹	
	Relevered Beta based on 50% Debt Capital structure and a weighted average Unlevered Beta					0.82	²	

Formulas:

¹ Unlevered Beta = Value Line's Beta/[1+(1-t)(D/E)]

² Relevered Beta = [Unlevered Beta][1+(1-t)(D/E)]

Where: D/E is the debt to equity ratio

t is the tax rate (assumed to be 40%)

Source: Columns a,b,c were extracted from the December 20, 2002 Value Line.

Source: Column d was extracted from Zacks.com.

Source: Column e was extracted from Standard and Poor's Stock Reports.

Source: Column g was extracted from capital structure worksheet included in the 2003 Capitalization Rate Study.

**2003 Capitalization Rate Study
Natural Gas Distribution Companies
Beta Analysis**

a	b	c	d	e	f	g	h	i
Value Line Rating	Company Name	Value Line Beta	Zacks Beta	Standard & Poor's Beta	Average Beta	Debt Equity Ratio	Unlevered Beta ¹	WTG Avg Debt/Equity Ratio
B+	Atmos Energy Corp.	0.60	-0.04	NMF	0.28	0.70	0.42	0.12
B+	NUI Corp.	0.65	0.04	0.30	0.33	1.15	0.38	0.07
B	Cascade Natural Gas	0.70	0.04	0.06	0.27	0.75	0.48	0.03
B	Semco Energy	0.60	0.28	NMF	0.44	4.46	0.16	0.29
B	Southern Union Co.	0.90	0.48	0.47	0.62	1.25	0.51	0.27
B	Southwest Gas Co.	0.70	0.51	0.58	0.60	1.31	0.39	0.27
B	UGI Corporation	0.75	0.08	0.13	0.32	1.13	0.45	0.26
Mean		0.70	0.20	0.31	0.41	1.54	0.40	0.19
Median		0.70	0.08	0.30	0.44		0.42	
Weighted					0.44		0.42	
Relevered Beta based on 50% Debt Capital Structure and mean Unlevered Beta						0.64	¹	
Relevered Beta based on 50% Debt Capital structure and a weighted average Unlevered Beta						0.68	²	

Formulas:

¹ Unlevered Beta = Value Line's Beta/[1+(1-t)(D/E)]

² Relevered Beta = [Unlevered Beta][1+(1-t)(D/E)]

Where: D/E is the debt to equity ratio

t is the tax rate (assumed to be 40%)

Source: Columns a,b,c were extracted from the December 20, 2002 Value Line.

Source: Column d was extracted from Zacks.com.

Source: Column e was extracted from Standard and Poor's Stock Reports.

Source: Column g was extracted from capital structure worksheet included in the 2003 Capitalization Rate Study.

**2003 Capitalization Rate Study
Water Companies
Flotation Cost Adjustment**

Equity				Debt			
Value Line Rating	Recommended Rate	Flotation Cost in %	Adjusted Rate	Moody's Rating	Recommended Rate	Flotation Cost in %	Adjusted Rate
A, B++, B+	11.29%	4.50%	11.82%	A2	7.75%	1.70%	7.88%
NR	11.29%	4.50%	11.82%				

Formula - Cost of Capital Adjusted for Flotation Costs

$$\frac{k_u}{1 - f}$$

Where k_u = The cost of capital unadjusted for flotation costs

f = Flotation cost as a percentage of the value of securities issued

**2003 Capitalization Rate Study
Water Companies
Summary of Rates of Return**

Common Equity		Preferred Stock			Bonds		
Value Line Rating	Rate of Return (1)	Moody's P/S Yields	Moody Rating	Rate of Return (2)	Moody's Bond Yields	Moody Rating	Rate of Return (2)
A, B++, B+	11.29%		aa1	6.42%	Aaa = NA	Aaa2	7.03%
		aa = 6.64%	aa2	6.64%		Aaa3	7.15%
NR	11.29%		aa3	6.86%		Aa1	7.28%
	(3)		a1	7.08%	Aa = 7.40%	Aa2	7.40%
		a = 7.30%	a2	7.30%		Aa3	7.52%
			a3	7.42%		A1	7.63%
			baa1	7.54%	A = 7.75%	A2	7.75%
		baa = 7.66%	baa2	7.66%		A3	7.88%
			baa3	7.78%		Baa1	8.01%
					Baa = 8.14%	Baa2	8.14%
						Baa3	8.27%

- Notes:
- (1) The Rate of Return on Common Equity was developed by staff based on the relative risk of the utilities in conjunction with the results of the various financial models and pertinent information from various sources.
 - (2) Rates of Return on Preferred Stocks and Bonds were based on Moody's "Utility Preferred Stock Yields" as of December 2002 and "Utility Bond Yields" as of January 3, 2003. However, because Moody assigns a yield to the groups Aaa, Aa, A and Baa for bonds; and aa, a, and baa for preferred stocks, the staff interpolates the difference between these groups in order to achieve a further refinement of the ratings.
 - (3) Southern California Water Company (SCWC) is the principal subsidiary of American States Water Co. As a stand alone company, SCWC is not rated by Value Line. Because American States Water Co. is part of the pool in determining the A, B++, B+ rate of return, it is staff's judgement that SCWC, as the only NR company, should receive a A, B++, B+ rate of return.

**2003 Capitalization Rate Study
Electric Generation Facilities
Capital Asset Pricing Model - Ex Ante**

Component	Value Line Ratings
	A, B++, B+
Expected Future Return, S&P 500	13.52%
Less: Risk Free Return 25 - 30 Year Treasury Bonds ¹	4.87%
Risk Premium	8.65%
Beta ²	0.76
Adjusted Risk Premium	6.59%
Risk Free Return 25 - 30 Year Treasury Bonds ¹	4.87%
Projected Return on Common Equity	11.46%

¹ Wall Street Journal 12/31/02 data

² The estimated beta is based on staff's beta analysis.

**2003 Capitalization Rate Study
Water Companies
Capital Asset Pricing Model - Ex Post**

Component	Value Line Ratings
	A, B++, B+
Common Stock Return (1926 - 2002) ¹	12.20%
Less: Long Term Government Bonds ¹	5.20%
Risk Premium	7.00%
Beta ²	0.76
Adjusted Risk Premium	5.34%
Risk Free Return 25 - 30 Year Treasury Bonds ³	4.87%
Projected Return on Common Equity	10.21%

¹ Ibbotson Associates Study

² The estimated beta is based on staff's beta analysis.

³ Wall Street Journal 12/31/02 data

2003 Capitalization Rate Study
Water Companies
Equity Rates

a	b	c	d	e	f	g	h	i	j	k	l	m
Value Line Rating	Company Name	Stock Price 12/31/02	Est. 2003 Earnings	2002 Earnings	2002 Dividends	Est. 2003 Dividends	Dividend Yield (g/c)	Est. Dividends Growth	Est. Earnings Growth	E/P Ratio (d/c)	DvYld+ DvGrth (h+i)	DvYld+ ErngsGr (h+j)
A	American Water Works	45.48	1.85	1.50	0.98	1.02	2.24%	4.00%	9.00%	3.19%	6.24%	11.24%
B++	CA Water Service Group	23.65	1.50	1.20	1.12	1.13	4.78%	1.00%	6.75%	6.34%	5.78%	11.53%
B+	Philadelphia Suburban	20.60	1.00	0.90	0.54	0.57	2.77%	6.00%	9.15%	4.85%	8.77%	11.92%
B+	American States Water	23.15	1.45	1.40	0.87	0.90	3.89%	2.00%	5.22%	6.26%	5.89%	9.11%
	Mean						3.42%	3.25%	7.53%	5.16%	6.67%	10.95%
	Median						3.33%	3.00%	7.88%	5.56%	6.07%	11.39%
	Weighted Average										6.74%	11.29%

Source: Columns a,b,d,e,f,g and i were extracted from the November 1, 2002 Value Line.

Source: Column j represents the average estimated earnings growth extracted from Value Line, Zacks.com and Thomson FN First Call.com.

Source: Column c was extracted from Yahoo Finance and represents 12/31/02 closing stock prices.

**2003 Capitalization Rate Study
Water Companies
Long Term Earnings Growth**

a	b	c	d	e	f
Value Line Rating	Company Name	Value Line	Zacks	Thomson	Average
A	American Water Works	9.00%	NA	NA	9.00%
B++	CA Water Service Group	8.50%	5.00%	NA	6.75%
B+	Philadelphia Suburban	10.50%	8.36%	8.60%	9.15%
B+	American States Water	6.50%	4.67%	4.50%	5.22%
	Mean	8.63%	6.01%	6.55%	7.53%
	Median	8.75%	5.00%	6.55%	7.88%
	Weighted Average				8.70%

Source:

Columns a, b and c were extracted from the November 1, 2002 Value Line.

Column d was extracted from the Zacks Investment Research, Inc.

Column e was extracted from the Thomson Financial Network.

**2003 Capitalization Rate Study
Water Companies
Capital Structure**

a	b	c	d	e	f	g	h	i	j	k	l	m
Value Line Rating	Company Name	Common Stock Outstanding	Common Stock Price 12/31/01	Mkt Value Equity (\$millions)	L.T. Debt (\$millions)	Pfd Stock (\$millions)	Common Equity (\$millions)	Total Capital (\$millions)	L.T. Debt %	Pfd Stock %	Common Equity %	Debt Equity ratio
A	American Water Works	100,061,238	45.48	4,550.79	3,380.30	0.00	4,550.79	7,931.09	43%	0%	57%	0.74
B++	CA Water Service Group	15,182,046	23.65	359.06	222.30	3.50	359.06	584.86	38%	1%	61%	0.61
B+	Philadelphia Suburban	68,858,761	20.60	1,418.49	573.50	0.80	1,418.49	1,992.79	29%	0%	71%	0.40
B+	American States Water	15,152,714	23.15	350.79	259.20	0.00	350.79	609.99	42%	0%	58%	0.74
	Mean								38.0%	0.2%	61.9%	0.62
	Median								40.3%	0.0%	59.4%	
	Weighted Average								39.9%	0.0%	60.1%	

Source: Columns a,b,c,f and g were extracted from the November 1, 2002 Value Line.

Source: Column d was extracted from Yahoo Finance and represents 12/31/02 closing stock prices.

**2003 Capitalization Rate Study
Water Companies
Beta Analysis**

a	b	c	d	e	f	g	h	i
Value Line Rating	Company Name	Value Line Beta	Zacks Beta	Standard & Poor's Beta	Average Beta	Debt Equity Ratio	Unlevered Beta ¹	WTG Avg Debt/Equity Ratio
A	American Water Works	0.45	NA	NA	0.45	0.74	0.31	0.53
B++	CA Water Service Group	0.60	0.04	NA	0.60	0.61	0.44	0.03
B+	Philadelphia Suburban	0.70	-0.31	-0.27	0.70	0.40	0.56	0.07
B+	American States Water	0.60	0.00	0.06	0.60	0.74	0.42	0.04
	Mean	0.59	-0.09	-0.11	0.59	0.62	0.43	0.17
	Median	0.60	0.00	-0.11	0.60		0.43	
	Weighted				0.51		0.37	
Relevered Beta based on 56% Debt Capital Structure						0.76 ¹		
Relevered Beta based on 56% Debt Capital structure and a weighted average Beta						0.65 ²		

Formulas:

¹ Unlevered Beta = Value Line Beta/[1+(1-t)(D/E)]

² Relevered Beta = [Unlevered Beta][1+(1-t)(D/E)]

Where: D/E is the debt to equity ratio

t is the tax rate (assumed to be 40%)

Source: Columns a,b,c were extracted from the November 1, 2002 Value Line.

Source: Column d was extracted from Zacks.com.

Source: Column e was extracted from Standard and Poor's Stock Reports.

Source: Column g was extracted from capital structure worksheet included in the 2003 Capitalization Rate Study.

**California State Board of Equalization
Valuation Division
2003 Capitalization Rate Study
Natural Gas Transmission Companies**

SBE No.	Company Name	Ratings		Capital Structure		Rates of Return		Basic Cap Rate
		Common Equity	Bond	Common Equity	Debt	Common Equity	Debt	
180	PG&E National Energy Group	Not Rated	Not Rated	65%	35%	13.09%	7.71%	11.21%
187	Mojave Pipeline Company	Not Rated	Not Rated	65%	35%	13.09%	7.71%	11.21%
188	Kern River Gas Transmission Company	Not Rated	Not Rated	65%	35%	13.09%	7.71%	11.21%
189	Standard Pacific Gas Line, Inc.	Not Rated	Not Rated	65%	35%	13.09%	7.71%	11.21%
190	Tuscarora Gas Transmission Company	Not Rated	Not Rated	65%	35%	13.09%	7.71%	11.21%
196	Questar Southern Trails Pipeline Company	Not Rated	Not Rated	65%	35%	13.09%	7.71%	11.21%
197	El Paso Natural Pipeline Company	Not Rated	Not Rated	65%	35%	13.09%	7.71%	11.21%

**2003 Capitalization Rate Study
Natural Gas Transmission Companies
Industry Notes**

- Staff relied upon the results of the following models in forecasting equity rates:
 1. Discounted Cash Flow analysis
 2. Capital Asset Pricing Model - Consideration was given to both the ex post and ex ante risk premiums.
- The following sample changes were made to the 2003 Capitalization Rate Study:
 1. Mitchell Energy & Energy Corporation was removed because it merged with Devon Energy Corporation.
 2. Williams Companies was removed because it sold Kern River Pipeline System to MidAmerica Energy Holdings Company on March 27, 2002.
 3. El Paso Energy Corporation was removed because the company is experiencing financial difficulty.
- In forecasting return on common equity, staff also considered the 2003 Cost of Capital Study for the Interstate Natural Gas Pipeline Industry.

2003 Capitalization Rate Study
Natural Gas Transmission Companies
Flotation Cost Adjustment

Equity				Bond			
Value Line Rating	Recommended Rate	Flotation Cost in %	Adjusted Rate	Moody's Rating	Recommended Rate	Flotation Cost in %	Adjusted Rate
Not Rated	12.50%	4.50%	13.09%	Not Rated	7.58%	1.70%	7.71%

Formula - Cost of Capital Adjusted for Flotation Costs

$$\frac{k_u}{1 - f}$$

Where k_u = The cost of capital unadjusted for flotation costs

f = Flotation cost as a percentage of the value of securities issued

2003 Capitalization Rate Study
Natural Gas Transmission Companies
Summary of Return on Common Equity

Description	Value Line B++, B+, B, C+		
	2003	2002	Change
E/P Ratio - Mean	6.49%	6.29%	0.19%
E/P Ratio - Median	7.36%	7.09%	0.27%
Dividends Yield + Dividends Growth - Mean	7.15%	6.97%	0.18%
Dividends Yield + Dividends Growth - Median	7.37%	6.00%	1.38%
Dividends Yield + Earnings Growth - Mean	11.20%	15.02%	-3.82%
Dividends Yield + Earnings Growth - Median	11.50%	15.22%	-3.72%
Capital Asset Pricing Model (CAPM) - Ex Ante	12.14%	11.25%	0.89%
Capital Asset Pricing Model (CAPM) - Ex Post	10.75%	10.72%	0.04%
Valuation Division Recommendation:	12.50%	13.00%	-0.50%

Interstate gas transmission companies are regulated by the Federal Energy Regulatory Commission (FERC). California is the second largest natural gas market in the United States.

The Discounted Cash Flow (DCF) model is computed using data from a sample of gas transmission companies with similar risk and operations. In addition to the financial risk, staff also considered business risk. The decrease in the DCF model this year was primarily caused by a decrease in the growth rate.

The information considered by staff includes the results of DCF analysis (Dividends Yield + Dividends Growth and Dividends Yield + Earnings Growth) and the results of the Capital Asset Pricing Model (CAPM) analysis.

2003 Capitalization Rate Study
Natural Gas Transmission Companies
Equity Rates

a	b	c	d	e	f	g	h	i	j	k	l	m
Value Line Rating	Company Name	Stock Price 12/31/02	2003 Est. Earnings	2002 Earnings	2002 Dividends	2003 Est. Dividends	Dividend Yield (g/c)	Est. Dividend Growth	Est. Earnings Growth	E/P Ratio (d/c)	Div Yld+ Div Grwh (h+i)	Div Yld+ Engs Grwh (h+j)
B++	EOG Resources	39.92	1.45	0.80	0.16	0.16	0.40%	2.50%	8.56%	3.63%	2.90%	8.96%
B++	National Fuel Gas	20.73	1.70	1.58	1.03	1.07	5.16%	4.50%	5.97%	8.20%	9.66%	11.13%
B++	Questar Corp.	27.82	1.95	1.80	0.72	0.74	2.66%	2.50%	10.25%	7.01%	5.16%	12.91%
B+	Devon Energy	45.90	4.20	3.00	0.20	0.20	0.44%	10.50%	8.32%	9.15%	10.94%	8.76%
B+	Equitable Resources	35.04	2.70	2.35	0.67	0.73	2.08%	7.50%	11.49%	7.71%	9.58%	13.57%
B	Cabot Oil & Gas 'A'	24.78	0.80	0.50	0.16	0.16	0.65%	4.00%	11.22%	3.23%	4.65%	11.87%
	Mean						1.90%	5.25%	9.30%	6.49%	7.15%	11.20%
	Median						1.36%	4.25%	9.41%	7.36%	7.37%	11.50%
	Weighted Average										8.30%	10.01%

Source:

Columns a, b, d - g, i, were extracted from the December 20, 2002 Value Line.

Column c was extracted from the Yahoo Market Guide.

Column j is an average of Value Line, Zacks, and Thomson.

**2003 Capitalization Rate Study
Natural Gas Transmission Companies
Long Term Earnings Growth**

a	b	c	d	e	f
Value Line Rating	Company Name	Value Line	Zacks	Thomson	Average
B++	EOG Resources	5.00%	8.60%	12.08%	8.56%
B++	National Fuel Gas	4.00%	6.33%	7.57%	5.97%
B++	Questar Corp.	11.00%	9.75%	10.00%	10.25%
B+	Devon Energy	8.50%	7.09%	9.38%	8.32%
B+	Equitable Resources	14.00%	10.30%	10.17%	11.49%
B	Cabot Oil & Gas 'A'	13.00%	10.00%	10.67%	11.22%
	Mean	9.25%	8.68%	9.98%	9.30%
	Median	9.75%	9.18%	10.09%	9.41%
	Weighted Average				8.75%

2003 Capitalization Rate Study
Natural Gas Transmission Company
Capital Asset Pricing Model - Ex Ante

Component	Industry Computation
Expected Future Return, S&P 500 ¹	13.52%
Less: Risk Free Return 25 - 30 Year Treasury Bonds ²	4.87%
Risk Premium	8.65%
Beta ³	0.84
Adjusted Risk Premium	7.27%
Risk Free Return 25 - 30 Year Treasury Bonds ²	4.87%
Projected Return on Common Equity	12.14%

¹ Dividend Yield for S&P 500@12/31/2002	1.81%
5 Year projected growth per First Call	11.71%
Expected future Return, S&P 500	13.52%

² Wall Street Journal 12/31/2002 data

³ Value Line's average beta was used because Zack's and Standard & Poor's beta appear inconsistent and would not be meaningful.

2003 Capitalization Rate Study
Natural Gas Transmission Companies
Capital Asset Pricing Model - Ex Post

Component	Industry Computation
Common Stock Return (1926 - 2002) ¹	12.20%
Less: Long Term Government Bonds ¹	5.20%
Risk Premium	7.00%
Beta ²	0.84
Adj. Risk Premium	5.88%
Risk Free Return 25 - 30 Year Treasury Bonds ³	4.87%
Projected Return on Common Equity	10.75%

¹ Ibbotson Associates Study

² Value Line's average beta was used because Zack's and Standard & Poor's beta appear inconsistent and would not be meaningful.

³ Wall Street Journal 12/31/2002 data

2003 Capitalization Rate Study
Natural Gas Transmission Companies
Beta Analysis

a	b	c	d	e	f	g	h	i
Value Line		Value		Standard		Debt		WTG Avg
Rating	Company Name	Line's	Zack's	& Poor's	Average	Equity	Unlevered	Debt/Equity
		Beta	Beta	Beta	Beta	Ratio	Beta ¹	Ratio
B++	EOG Resources	0.90	0.93	0.94	0.92	0.27	0.80	0.051
B++	National Fuel Gas	0.75	0.23	0.21	0.40	0.69	0.28	0.063
B++	Questar Corp.	0.75	0.62	0.62	0.66	0.52	0.51	0.058
B+	Devon Energy	0.90	0.67	0.67	0.75	1.08	0.45	0.525
B+	Equitable Resources	0.75	0.44	0.45	0.55	0.21	0.49	0.018
B	Cabot Oil & Gas 'A'	1.00	0.83	0.84	0.89	0.50	0.68	0.019
	Mean	0.84	0.62	0.62	0.69	0.54	0.53	
	Median	0.83	0.65	0.65	0.71		0.50	
	Weighted				0.73		0.52	0.73
	Relevered Beta based on 30% Debt Capital Structure					0.67 ²		
	Relevered Beta based on 30% Debt Capital Structure and a weighted average Beta					0.65 ²		

Formulas:

¹ Unlevered Beta = Beta/[1+(1-t)(D/E)]

² Relevered Beta = Unlevered Beta X [1+(1-t)(D/E)]

Where: D/E is the debt to equity ratio

t is the tax rate (assumed to be 40%)

**2003 Capitalization Rate Study
Natural Gas Transmission Companies
Capital Structure**

a	b	c	d	e	f	g	h	i	j	k	l	m	n
	Moody's	Moody's		Common	Common	Market Value	L.T.	Pfd	Common	Total Cap.	L.T.	Pfd	Common
Value Line	Bond	P/S		Stock	Stock Price	Com. Stock	Debt	Stock	Stock	(\$mill)	Debt	Stock	Stock
Rating	Rating	Rating	Company Name	Outstanding	12/31/02	(e * f)	(\$millions)	(\$millions)	(\$millions)	(h + i + j)	%	%	%
B++	NR	NR	EOG Resources	115,537,357	39.92	4,612.3	1,090.9	147.9	4,612.3	5,851.1	19%	3%	79%
B++	A2	NA	National Fuel Gas	80,264,734	20.73	1,663.9	1,145.3	0.0	1,663.9	2,809.2	41%	0%	59%
B++	A1	NA	Questar Corp.	81,912,187	27.82	2,278.8	1,178.4	0.0	2,278.8	3,457.2	34%	0%	66%
B+	NR	NR	Devon Energy	156,666,000	45.90	7,191.0	7,646.0	150.0	7,191.0	14,987.0	51%	1%	48%
B+	A2	NA	Equitable Resources	62,497,185	35.04	2,189.9	455.2	0.0	2,189.9	2,645.1	17%	0%	83%
B	NR	NA	Cabot Oil & Gas 'A'	31,795,548	24.78	787.9	395.0	0.0	787.9	1,182.9	33%	0%	67%
			Mean								32.6%	0.7%	66.9%
			Median								33.8%	0.0%	66.3%
			Weighted Average								38.5%	1.1%	60.5%

NR - Not Rated

Source:

Columns a, d, e, h, i, were extracted from the December 20, 2002 Value Line.

Columns b, c, were extracted from the 2002 Moody's Public Utility and Industrial Manuals.

Column f was extracted from the Yahoo Market Guide.

2003 Capitalization Rate Study
Natural Gas Transmission Companies
Bonds - Rate of Return

Utility Bond Yield	Bond Rating				
	Aaa	Aa	A	Baa	Avg Utility
As of December 31, 2002	N/A	6.91%	7.11%	7.58%	7.20%

Staff applied a bond rating of Baa2 for the Natural Gas Transmission Companies. The yield rate for utility bonds rated Baa2 was 7.58%.

Source: Moody's Public Utility, Credit Market Trends Service

**California State Board of Equalization
Valuation Division
2003 Capitalization Rate Study
Local Exchange Companies**

SBE No.	Company Name	Ratings		Capital Structure		Rates of Return		Basic Cap Rate
		Financial	Bond	Common Equity	Debt	Common Equity	Debt	
279	SBC California	A+	Aa3	75%	25%	11.26%	7.10%	10.22%
201	Verizon California Inc.	A+	Aa3	75%	25%	11.26%	7.10%	10.22%
284	CTC of California	Not Rated	Not Rated	70%	30%	12.57%	7.71%	11.11%
270	CTC of The Golden State	Not Rated	Not Rated	70%	30%	12.57%	7.71%	11.11%
311	CTC of Tuolumne	Not Rated	Not Rated	70%	30%	12.57%	7.71%	11.11%
294	Roseville Telephone Company	Not Rated	Not Rated	70%	30%	12.57%	7.71%	11.11%
	Other Local Exchange Companies	Not Rated	Not Rated	70%	30%	13.87%	8.81%	12.35%

**2003 Capitalization Rate Study
Local Exchange Companies
Industry Summary**

- Staff relied on the following models in forecasting equity rates:
 1. Discounted Cash Flow (DCF) – Staff considered the weighted average dividend yield plus earnings growth.
 2. Capital Asset Pricing Model (CAPM) – Staff also considered both the ex ante and ex post premiums.
- Staff's rate of return for common equity for lien date 2003 is based on the relative risk of the utilities in conjunction with the results of the various financial models. The data and/or information considered by staff include the results of the DCF analysis (Dividend Yield plus Dividend Growth and Dividend Yield plus Earnings Growth) and the CAPM analysis, and the spreads between utility bond yields.
- Sprint Corporation is included in the sample for the first time in the 2003 capitalization rate study for local exchange companies. According to the January 3, 2003 issue of Value Line, Sprint generated 34.9% local exchange revenues in 2001. Also, Sprint is included in the 2003 capitalization rate study for interexchange telephone companies, as was the case in prior years.
- SBC California is a subsidiary of SBC Communications Inc.
- Verizon California Inc. is a subsidiary of Verizon Communications.

**2003 Capitalization Rate Study
Local Exchange Companies
Flotation Cost Adjustment**

Equity				Debt			
Value Line Rating	Recommended Rate	Flotation Cost in %	Adjusted Rate	Moody's Rating	Recommended Rate	Flotation Cost in %	Adjusted Rate
A+	10.75%	4.50%	11.26%	Aa3	6.98%	1.70%	7.10%
NR-1	12.00%	4.50%	12.57%	Baa2	7.58%	1.70%	7.71%
NR-2	13.25%	4.50%	13.87%	Not Rated	8.66%	1.70%	8.81%

Formula: Cost of Capital Adjusted for Flotation Costs

$$\frac{k_u}{1 - f}$$

Where k_u = Cost of capital unadjusted for flotation costs

f = Flotation cost as a percentage of the value of securities issued

NR-1 : Although no ratings were available for the companies, a Value Line rating of B was applied to the equity and a Moody bond rating of Baa2 was applied to represent the debt for companies with a value between \$50 million - \$300 million.

NR-2 : Although no ratings were available for the companies, the Value Line rating of lower than B was applied to the equity and staff estimate was used for the debt for companies with a value less than \$50 Million.

**2003 Capitalization Rate Study
Local Exchange Companies
Return On Common Equity Summary**

Description	A+, A			B++, B+, B		
	2003	2002	Change	2003	2002	Change
E/P Ratio - Mean	7.37%	6.10%	1.27%	8.10%	5.06%	3.04%
E/P Ratio - Median	7.50%	6.27%	1.22%	8.00%	5.06%	2.94%
Dividend Yield + Dividend Growth - Mean	6.14%	5.59%	0.55%	7.03%	8.13%	-1.10%
Dividend Yield + Dividend Growth - Median	6.12%	5.55%	0.58%	5.82%	8.13%	-2.31%
Weighted Average (Dividend Yield + Dividend Growth - Mean)	6.09%	5.76%	0.33%	6.13%	8.25%	-2.12%
Dividend Yield + Earnings Growth - Mean	9.51%	12.77%	-3.26%	10.79%	18.87%	-8.08%
Dividend Yield + Earnings Growth - Median	8.91%	12.52%	-3.60%	12.04%	18.87%	-6.83%
Weighted Average (Dividend Yield + Earnings Growth - Mean)	9.05%	12.45%	-3.40%	9.71%	18.28%	-8.56%

	A+, A	B++, B+, B	Lower than B
CAPM Analysis - Ex Ante:			
2002 Lien Date	10.56%	12.61%	NMF
2003 Lien Date	11.34%	13.10%	NMF
CAPM Analysis - Ex Post:			
2002 Lien Date	10.09%	11.94%	NMF
2003 Lien Date	10.11%	11.53%	NMF
Discounted Cash Flow			
2002 Lien Date	12.45%	NMF	NMF
2003 Lien Date	9.05%	9.71%	NMF
2002 SBE Rate	11.75%	13.00%	14.25%
2003 Recommended Rate	<u>10.75%</u>	<u>12.00%</u>	<u>13.25%</u>

2003 Capitalization Rate Study
Local Exchange Companies
Equity Rates

a	b	c	d	e	f	g	h	i	j	k	l	m
Value Line Rating	Company Name	Stock Price 12/31/02	Est. 2003 Earnings	2002 Earnings	2002 Dividends	Est. 2003 Dividends	Dividend Yield (g/c)	Est. Dividends Growth	Est. Earnings Growth	E/P Ratio (d/c)	DivYld+ DivsGrw (h+i)	DivYld+ ErngsGrw (h+j)
A	ALLTEL Corp.	51.00	3.45	2.95	1.37	1.41	2.76%	3.00%	8.90%	6.76%	5.76%	11.66%
A+	BellSouth Corp.	25.87	2.00	1.25	0.78	0.82	3.17%	3.50%	5.47%	7.73%	6.67%	8.64%
A+	SBC Communications Inc. ¹	27.11	2.00	2.25	1.07	1.08	3.98%	2.50%	4.56%	7.38%	6.48%	8.55%
A+	Verizon Communications ²	38.75	2.95	3.05	1.54	1.60	4.13%	1.50%	5.06%	7.61%	5.63%	9.19%
Mean							3.51%	2.63%	6.00%	7.37%	6.14%	9.51%
Median							3.58%	2.75%	5.26%	7.50%	6.12%	8.91%
Weighted Average											6.09%	9.05%
B++	CenturyTel Inc.	29.38	2.35	2.20	0.21	0.24	0.82%	11.00%	12.11%	8.00%	11.82%	12.93%
B	Sprint Corporation ³	14.48	1.45	1.35	0.50	0.50	3.45%	0.00%	3.95%	10.01%	3.45%	7.40%
B	Telephone & Data Systems	47.02	2.95	2.80	0.54	0.62	1.32%	4.50%	10.72%	6.27%	5.82%	12.04%
Mean							1.86%	5.17%	8.93%	8.10%	7.03%	10.79%
Median							1.32%	4.50%	10.72%	8.00%	5.82%	12.04%
Weighted Average											6.13%	9.71%

Source: Columns a, d-g, i, were extracted from the January 3, 2003 Value Line.
Column c was extracted from the January 2, 2003 Wall Street Journal.

¹SBC California is a subsidiary of SBC Communications Inc.

²Verizon California Inc. is a subsidiary of Verizon Communications.

³According to the January 3, 2003 Value Line, Sprint Corporation generated 34.9% local exchange revenues in 2001.
As a result, assessee was included in this sample for the first time in addition to being included in the interexchange
2003 capitalization rate study.

2003 Capitalization Rate Study
Local Exchange Companies
Capital Structure

a	b	c	d	e	f	g	h	i	j	k	l	m
Value Line Rating	Company Name	Common Stock Outstanding	Common Stock Price 12/31/02	Market Value Common	Long Term Debt (\$Million)	Preferred Stock (\$Million)	Common Stock (\$Million)	Total Capital (\$Million)	L.T. Debt %	Preferred Stock %	Common Stock %	Value Line Page
A	ALLTEL Corp.	311,031,386	51.00	15,862.60	6,391.40	0.41	15,862.60	22,254.41	28.72%	0.00%	71.28%	724
A+	BellSouth Corp.	1,858,563,844	25.87	48,081.05	12,287.00	0.00	48,081.05	60,368.05	20.35%	0.00%	79.65%	726
A+	SBC Communications Inc. ¹	3,320,200,000	27.11	90,010.62	18,933.00	0.00	90,010.62	108,943.62	17.38%	0.00%	82.62%	736
A+	Verizon Communications ²	2,735,762,590	38.75	106,010.80	46,029.00	0.00	106,010.80	152,039.80	30.27%	0.00%	69.73%	741
	Mean			64,991.27				343,605.88	24.18%	0.00%	75.82%	
	Median			69,045.83					24.54%	0.00%	75.46%	
	Weighted Average								24.34%	0.00%	75.66%	
B++	CenturyTel Inc.	142,607,886	29.38	4,189.82	3,650.0	8.0	4,189.82	7,847.82	46.51%	0.10%	53.39%	728
B	Sprint Corporation ³	892,900,000	14.48	12,929.19	3,169.0	10.0	12,929.19	16,108.19	19.67%	0.06%	80.26%	737
B	Telephone & Data Sys.	58,676,706	47.02	2,758.98	2,379.9	9.0	2,758.98	5,147.88	46.23%	0.17%	53.59%	739
	Mean			6,626.00				29,103.89	37.47%	0.11%	62.42%	
	Median			4,189.82					46.23%	0.10%	53.59%	
	Weighted Average								31.61%	0.09%	68.30%	

Source: Column a, c, f, g, were extracted from the January 3, 2003 Value Line. Capital structure as of September 30, 2002.
Column d was extracted from the January 2, 2003 Wall Street Journal.

¹SBC California is a subsidiary of SBC Communications Inc.

²Verizon California Inc. is a subsidiary of Verizon Communications.

³According to the January 3, 2003 Value Line, Sprint Corporation generated 34.9% local exchange revenues in 2001.
As a result, assessee was included in this sample for the first time in addition to being included in the interexchange
2003 capitalization rate study.

**2003 Capitalization Rate Study
Local Exchange Companies
Capital Asset Pricing Model - Ex Ante**

Component	Value Line Rating	
	A+, A	B++, B+, B
Expected Future Return, S&P 500 ¹	13.52%	13.52%
Less: Risk Free Return, Long Term Government Bonds ²	4.87%	4.87%
Ex Ante Risk Premium	8.65%	8.65%
Relevered Beta ³	0.75	0.95
Adjusted Risk Premium	6.47%	8.23%
Risk Free Return, Long Term Government Bonds ²	4.87%	4.87%
Projected Equity Yield	11.34%	13.10%

¹ Dividend Yield for S&P 500 Companies @ December 31, 2002 - Spglobal.com

Next 5 Years Estimated Earnings Growth per First Call - Yahoo Finance, January 3, 2003

Expected Future Return for S&P 500 Companies

1.81%

11.71%

13.52%

² Wall Street Journal, January 2, 2003.

³ The estimated betas are derived from a representative sample of local exchange companies with similar ratings.

2003 Capitalization Rate Study
Local Exchange Companies
Capital Asset Pricing Model - Ex Post

Component	Value Line Rating	
	A+, A	B++, B+, B
Common Stock Return (1926-2002) ¹	12.20%	12.20%
Less: Income - Long Term Government Bonds (1926-2002) ¹	5.20%	5.20%
Ex Post Risk Premium	7.00%	7.00%
Relevered Beta ²	0.75	0.95
Adjusted Risk Premium	5.24%	6.66%
Risk Free Return, Long Term Government Bonds ³	4.87%	4.87%
Projected Equity Yield	10.11%	11.53%

¹ Ibbotson Associates Study.

² The estimated betas are derived from a representative sample of local exchange companies with similar ratings.

³ Wall Street Journal, January 2, 2003.

**2003 Capitalization Rate Study
Local Exchange Companies
Long Term Earnings Growth**

a	b	c	d	e	f
Value Line Rating	Company Name	Value Line	Zacks	Thomson	Average
A	ALLTEL Corp.	10.50%	7.60%	8.60%	8.90%
A+	BellSouth Corp.	4.50%	5.41%	6.49%	5.47%
A+	SBC Communications	1.50%	6.04%	6.15%	4.56%
A+	Verizon Communications	3.00%	5.88%	6.29%	5.06%
	Mean	4.88%	6.23%	6.88%	6.00%
	Median	3.75%	5.96%	6.39%	5.26%
	Weighted Average				5.22%
<hr/>					
B++	CenturyTel Inc.	13.50%	11.62%	11.22%	12.11%
B	Sprint Corporation	3.50%	3.72%	4.63%	3.95%
B	Telephone & Data Systems	9.50%	12.03%	10.62%	10.72%
	Mean	8.83%	9.12%	8.82%	8.93%
	Median	9.50%	11.62%	10.62%	10.72%
	Weighted Average				7.35%

Source: Columns a, c were extracted from the January 3, 2003 Value Line.
Column d was extracted from Zacks.com.
Column e was extracted from ThomsonFN.com.

2003 Capitalization Rate Study
Local Exchange Companies
Beta Analysis

a	b	c	d	e	f	g	h	i
Value Line		Value	Zacks	Standard	Average	Debt	Unlevered	WTG Avg
Rating	Company Name	Line	Beta	& Poor's	Beta	Equity	Beta ¹	Debt/Equity
		Beta	Beta	Beta	Beta	Ratio		Ratio
A	ALLTEL Corp.	0.90	0.64	0.64	0.73	0.40	0.59	0.03
A+	BellSouth Corp.	0.85	0.59	0.59	0.68	0.26	0.59	0.04
A+	SBC Communications	0.95	0.61	0.59	0.72	0.21	0.64	0.07
A+	Verizon Communications	1.00	0.70	0.70	0.80	0.43	0.63	0.19
	Mean	0.93	0.64	0.63	0.73	0.33	0.61	
	Median	0.93	0.63	0.62	0.72		0.61	
	Weighted				0.75		0.62	0.33
B++	CenturyTel Inc.	1.05	0.88	0.88	0.94	0.87	0.61	0.24
B	Sprint Corporation	1.05	0.94	0.91	0.97	0.25	0.84	0.14
B	Telephone & Data Systems	0.95	1.13	1.13	1.07	0.87	0.70	0.15
	Mean	1.02	0.98	0.97	0.99	0.66	0.72	
	Median	1.05	0.94	0.91	0.97		0.70	
	Weighted				0.98		0.76	0.52

For A+, A Companies:

Relevered beta based on 25% debt capital structure	A+, A	0.73 ²	B++, B+, B	-----
Relevered beta based on 25% debt capital structure and a weighted average beta		0.75 ²		-----

For B++,B+,B Companies:

Relevered beta based on 30% debt capital structure		-----		0.91 ²
Relevered beta based on 30% debt capital structure and a weighted average beta		-----		0.95 ²

Formulas:

¹ Unlevered beta = beta/[1+(1-t)(d/e)]

² Relevered beta = Unlevered beta x [1+(1-t)(d/e)]

Where: d/e is the debt to equity ratio

t is the tax rate (assumed to be 40%)

Source: Columns a, c were extracted from the January 3, 2003 Value Line.
Column d was extracted from Zacks.com.

Column e was extracted from the Standard and Poor's Stock Reports,
December 2002.

**California State Board of Equalization
Valuation Division
2003 Capitalization Rate Study
Electric Generation Facilities**

SBE No.	Company Name	Ratings		Capital Structure		Rates of Return		Basic Cap Rate
		Financial	Bond	Common Equity	Debt	Common Equity	Debt	
	Recently Constructed Facilities¹	C++	Baa2	45%	55%	16.87%	11.13%	13.71%
	Composite Facilities²	C++	B1	45%	55%	17.78%	11.93%	14.56%
	Older Facilities³	C++	Caa1	45%	55%	19.14%	12.40%	15.43%

¹ Recently Constructed Facilities - Facilities constructed after September 1996 incorporating modern electric generation technologies at the time they were built.

² Composite Facilities - Facilities that were sold off by vertically integrated electric utilities for which replacement of some obsolete generating units with modern electric generation technologies have been made.

³ Older Facilities - Facilities that were sold off by vertically integrated electric utilities for which no replacements, other than for routine maintenance, have been made.

2003 Capitalization Rate Study
Electric Generation Facilities
Industry Notes

- During 2002, the wholesale price of electricity continued to tumble and the price of generation company common stock decreased drastically. More than 20 new power plants have been built or were under construction as of December 31, 2002. These new facilities have contributed to a short-term oversupply of generating capacity. Due to the short-term oversupply of generating capacity and a downturn in the economy, it is likely that potential investors in the electric generation industry will continue to perceive high volatility and risk in their investment for the foreseeable future. This perception should persist until the supply-and-demand in electric generation is in equilibrium and/or there is an improvement in the economy.
- Staff relied upon the CAPM model to develop the capitalization rates. An additional risk premium has been added to both the equity and the debt rates to recognize the distressed state of the industry.
- Staff considered the capital structure recommended by the California Energy Commission (CEC) for electric generation companies in determining the capital structure for this industry. CEC's recommendation is outlined in the draft report titled "Comparative Cost of California Central Station Electricity Generation Technologies" dated February 11, 2003.
- Recommendations for capitalization rates for electric generation facilities submitted by the industry have been considered in staff's analysis.

**2003 Capitalization Rate Study
Electric Generation Facilities
Flotation Cost Adjustment**

Value Line Rating	Equity			Debt		
	Recommended Rate	Flotation Cost in %	Adjusted Rate	Recommended Rate	Flotation Cost in %	Adjusted Rate
Recently Constructed Facilities	16.12%	4.50%	16.87%	10.94%	1.70%	11.13%
Composite Facilities	16.98%	4.50%	17.78%	11.72%	1.70%	11.93%
Older Facilities	18.28%	4.50%	19.14%	12.19%	1.70%	12.40%

Formula - Cost of Capital Adjusted for Flotation Costs

$$\frac{k_u}{1 - f}$$

Where k_u = The cost of capital unadjusted for flotation costs

f = Flotation cost as a percentage of the value of securities issued

**2003 Capitalization Rate Study
Electric Generation Facilities
Summary of Rates of Return**

Common Equity		Preferred Stock			Bonds		
Value Line Rating	Rate of Return (1)	Moody's P/S Yields	Moody Rating	Rate of Return (2)	Moody's Bond Yields	Moody Rating	Rate of Return (2)
Recently Constructed Facilities	16.12%		aa1	6.47%	Aaa=NA	Aaa2	6.58%
		aa=6.62%	aa2	6.62%		Aaa3	6.69%
Composite Facilities	16.98%	.	aa3	6.77%	Aa=6.91%	Aa1	6.80%
			a1	6.91%		Aa2	6.91%
Older Facilities	18.28%	a=7.06%	a2	7.06%	A=7.11%	Aa3	6.98%
			a3	7.23%		A1	7.04%
			baa1	7.40%		A2	7.11%
		baa=7.57%	baa2	7.57%	Baa=7.58%	A3	7.27%
			baa3	7.74%		Baa1	7.42%
						Baa2	7.58%
						Baa3	7.74%
						Ba1	7.89%
						Ba2	8.05%
						Ba3	8.21%
						B1	8.36%
						B2	8.52%
						B3	8.68%
						Caa1	8.83%

- Notes:
- (1) The Rate of Return on Common Equity was developed by staff based on the relative risk of the utilities in conjunction with the results of the various financial models and pertinent information from various sources.
 - (2) Rates of Return on Preferred Stocks and Bonds were based on Moody's "Utility Preferred Stock Yields" as of December 2002 and "Utility Bond Yields" as of January 3, 2003. However, because Moody assigns a yield to the groups Aaa, Aa, A and Baa for bonds; and aa, a, and baa for preferred stocks, the staff interpolates the difference between these groups in order to achieve a further refinement of the ratings.

**2003 Capitalization Rate Study
Electric Generation Facilities
Capital Asset Pricing Model - Ex Ante**

Component	Types of Facilities		
	Recently Constructed	Composite	Older
Expected Future Return, S&P 500	13.52%	13.52%	13.52%
Less: Risk Free Return 25 - 30 Year Treasury Bonds ¹	4.87%	4.87%	4.87%
Risk Premium	8.65%	8.65%	8.65%
Beta ²	1.30	1.40	1.55
Adjusted Risk Premium	11.25%	12.11%	13.41%
Risk Free Return 25 - 30 Year Treasury Bonds ¹	4.87%	4.87%	4.87%
Projected Return on Common Equity	16.12%	16.98%	18.28%

¹ Wall Street Journal 12/31/02 data

² The estimated betas are based on staff's judgement.

2003 Capitalization Rate Study
Electric Generation Facilities
Capital Asset Pricing Model - Ex Post

Component	Types of Facilities		
	Recently Constructed	Composite	Older
Common Stock Return (1926 - 2002) ¹	12.20%	12.20%	12.20%
Less: Long Term Government Bonds ¹	5.20%	5.20%	5.20%
Risk Premium	7.00%	7.00%	7.00%
Beta ²	1.30	1.40	1.55
Adjusted Risk Premium	9.10%	9.80%	10.85%
Risk Free Return 25 - 30 Year Treasury Bonds ³	4.87%	4.87%	4.87%
Projected Return on Common Equity	13.97%	14.67%	15.72%

¹ Ibbotson Associates Study

² The estimated betas are based on staff's judgement.

³ Wall Street Journal 12/31/02 data

2003 Capitalization Rate Study
Electric Generation Facilities
Equity Rates

a	b	c	d	e	f	g	h	i	j	k	l	m
Value Line		Stock	Est.			Est.	Dividend	Est.	Est.	E/P	DvYld+	DvYld+
Rating	Company Name	Price	2003	2002	2002	2003	Yield	Dividends	Earnings	Ratio	DvGrth	ErngsGr
		12/31/02	Earnings	Earnings	Dividends	Dividends	(g/c)	Growth	Growth	(d/c)	(h+i)	(h+j)
C++	AES Corp.	3.02	0.90	0.95	0.00	0.00	0.00%	0.00%	12.60%	29.80%	0.00%	12.60%
C++	Calpine Corp.	3.26	0.75	0.70	0.00	0.00	0.00%	0.00%	8.65%	23.01%	0.00%	8.65%
C++	Mirant Corp.	1.87	NMF	NMF	0.00	0.00	0.00%	0.00%	9.26%	NMF	0.00%	9.26%
C+	Reliant Resources	3.20	NMF	NMF	0.00	0.00	0.00%	0.00%	6.79%	NMF	0.00%	6.79%
	Mean						0.00%	0.00%	9.33%	26.40%	0.00%	9.33%
	Median						0.00%	0.00%	8.96%	26.40%	0.00%	8.96%
	Weighted Average										0.00%	9.80%

Source: Columns a,b,d,e,f,g and i were extracted from the January 10, 2003 Value Line.

Source: Column j represents the average estimated earnings growth extracted from Value Line, Zacks.com and Thomson FN First Call.com.

Source: Column c was extracted from Yahoo Finance and represents 12/31/02 closing stock prices.

**2003 Capitalization Rate Study
Electric Generation Facilities
Long Term Earnings Growth**

a	b	c	d	e	f
Value Line Rating	Company Name	Value Line	Zacks	Thomson	Average
C++	AES Corp.	NMF	9.80%	15.40%	12.60%
C++	Calpine Corp.	3.50%	10.10%	12.36%	8.65%
C++	Mirant Corp.	NMF	7.44%	11.08%	9.26%
C+	Reliant Resources	NMF	7.25%	6.33%	6.79%
Mean		3.50%	8.65%	11.29%	9.33%
Median		3.50%	8.62%	11.72%	8.96%

**2003 Capitalization Rate Study
Electric Generation Facilities
Capital Structure**

a	b	c	d	e	f	g	h	i	j	k	l	m
Value Line Rating	Company Name	Common Stock Outstanding	Common Stock Price 12/31/02	Mkt Value Equity (\$millions)	L.T. Debt (\$millions)	Pfd Stock (\$millions)	Common Equity (\$millions)	Total Capital (\$millions)	L.T. Debt %	Pfd Stock %	Common Equity %	Debt Equity ratio
C++	AES Corp.	543,800,891	3.02	1,642.28	8,055.99	0.00	1,642.28	9,698.27	83%	0%	17%	4.91
C++	Calpine Corp.	377,999,176	3.26	1,232.28	4,654.64	0.00	1,232.28	5,886.92	79%	0%	21%	3.78
C++	Mirant Corp.	403,910,722	1.87	755.31	3,563.70	0.00	755.31	4,319.01	83%	0%	17%	4.72
C+	Reliant Resources	290,441,403	3.20	929.41	1,927.04	0.00	929.41	2,856.45	67%	0%	33%	2.07
	Mean								78%	0%	22%	3.87
	Median								81%	0%	19%	
	Weighted Average								80%	0%	20%	

Source: Columns a,b,c,f and g were extracted from the January 10, 2003 Value Line. Long term debt was discounted to reflect market value.

Source: Column d was extracted from Yahoo Finance and represents 12/31/02 closing stock prices.

**2003 Capitalization Rate Study
Electric Generation Facilities
Beta Analysis**

a	b	c	d	e	f	g	h	i
Financial Strength		Value Line's	Zack's	Standard & Poor's	Average	Debt Equity	Unlevered	WTG Avg
Value Line	Company Name	Beta	Beta	Beta	Beta	Ratio	Beta ¹	Debt/Equity Ratio
C++	AES Corp.	1.75	1.81	2.20	1.92	4.91	0.49	2.09
C++	Calpine Corp.	1.75	1.86	1.59	1.73	3.78	0.53	0.98
C++	Mirant Corp.	2.05	NA	NA	2.05	4.72	0.54	0.90
C+	Reliant Resources	NMF	NA	NA	NA	2.07	NA	0.26
	Mean	1.85	1.84	1.90	1.90	3.87	0.52	0.58
	Median	1.75	1.84	1.90	1.92		0.53	
	Weighted				1.89		0.51	
	Relevered Beta based on 55% Debt Capital Structure and mean Unlevered Beta					0.90	¹	
	Relevered Beta based on 55% Debt Capital structure and a weighted average Unlevered Beta					0.88	²	

Formulas:

¹ Unlevered Beta = Average Beta/[1+(1-t)(D/E)]

² Relevered Beta = [Unlevered Beta][1+(1-t)(D/E)]

Where: D/E is the debt to equity ratio

t is the tax rate (assumed to be 40%)

Source: Columns a,b,c were extracted from the January 10, 2003 Value Line.

Source: Column d was extracted from Zacks.com.

Source: Column e was extracted from Standard and Poor's Stock Reports.

Source: Column g was extracted from capital structure worksheet included in the 2003 Capitalization Rate Study.

**California State Board of Equalization
Valuation Division
2003 Capitalization Rate Study
Interexchange Telephone Companies**

SBE No.	Company Name	Ratings		Capital Structure		Rates of Return		Basic Cap Rate
		Common Equity	Bond	Common Equity	Long Term Debt	Common Equity	Long Term Debt	
2310	AT&T Communications	Major Co.	Major Co.	65%	35%	14.14%	7.97%	11.98%
2014	Sprint Communications Co., L.P.	Major Co.	Major Co.	65%	35%	14.14%	7.97%	11.98%
2035	Cable & Wireless USA, Inc.	C+	Ba ¹	60%	40%	15.18%	8.60%	12.55%
2463	Qwest Communications Corporation	C+	Caa1	60%	40%	15.18%	8.74%	12.60%
7677	Talk.Com Holding Corporation	C+	NR	60%	40%	15.18%	9.37%	12.86%
7522	Time Warner Telecom of California, L.P.	C	B3	60%	40%	16.23%	8.60%	13.18%
7761	Level 3 Communications LLC	C	Caa3	60%	40%	16.23%	8.99%	13.33%
2043	Pac-West Telecomm, Inc.	C	Caa3	60%	40%	16.23%	8.99%	13.33%
7686	Primus Telecommunications, Inc.	C	Caa3	60%	40%	16.23%	8.99%	13.33%
7630	Broadwing Communications Services, Inc.	C	NR	60%	40%	16.23%	9.37%	13.48%
	Other Interexchange Carriers	Not Rated	Not Rated	60%	40%	18.32%	9.37%	14.74%
	Other Interexchange Resellers	Not Rated	Not Rated	60%	40%	21.47%	10.13%	16.93%

¹ The debt rate used is based on a "B3" rating. This rate is better suited to the company's California unitary interexchange telephone operations.

**2003 Capitalization Rate Study
Interexchange Telephone Companies
Industry Notes**

- Staff relied on the following models in forecasting equity rates:
 1. Discounted Cash Flow (DCF) – Staff did not consider the DCF model because of the limited number of companies paying dividends.
 2. Capital Asset Pricing Model (CAPM) - Consideration was given to both the ex post and ex ante risk premiums.

Due to similarities in their operating markets, competitive environments, relative size, and industry risk, staff recommends the same equity and debt rates for AT&T and Sprint (major companies). Staff used data from Moody's Investors Service and Standard & Poor's to determine the 2003 lien date bond ratings.

For companies whose common equity, preferred stocks and/or bonds are not rated, staff judgment is used in assigning the rates of return because the circumstances or reasons for not rating the bonds or preferred stocks are different for each company.

- The following companies were added to the 2003 Capitalization Rate Study:
 1. Talk.Com Holding Corporation
 2. Pac-West Telecomm, Inc.
 3. Primus Telecommunications, Inc.
- The following companies were omitted from the 2003 Capitalization Rate Study because of bankruptcy filing or because Value Line reported no meaningful data for them:
 1. MCIWorldCom Network Services, Inc.
 2. Williams Communications LLC
 3. Allegiance Telecom of California, Inc.
 4. RCN Telecom Services of California, Inc.
- The capitalization rates derived are intended to be applied only to the companies' unitary interexchange telephone operations.

**2003 Capitalization Rate Study
Interexchange Telephone Companies
Flotation Cost Adjustment**

Equity				Debt			
Value Line Rating	Recommended Rate	Flotation Cost in %	Adjusted Rate	Moody's Rating	Recommended Rate ²	Flotation Cost in %	Adjusted Rate
B+	13.50%	4.50%	14.14%	Ba1	7.57%	1.70%	7.70%
Major Company ¹	13.50%	4.50%	14.14%	Major Co / Baa2 ¹	7.83%	1.70%	7.97%
C+	14.50%	4.50%	15.18%	Baa3	7.99%	1.70%	8.12%
C	14.50%	4.50%	15.18%	B3	8.46%	1.70%	8.60%
Not Rated	15.50%	4.50%	16.23%	Caa1	8.59%	1.70%	8.74%
Other IEX Carriers	17.50%	4.50%	18.32%	Caa2	8.71%	1.70%	8.86%
Other IEX Resellers	20.50%	4.50%	21.47%	Caa3	8.84%	1.70%	8.99%
				Not Rated	9.21%	1.70%	9.37%
				Not Rated	9.96%	1.70%	10.13%

¹ Staff recommends the same equity rate of return and debt rate for the major companies AT&T and Sprint.

² The recommended debt rate was adjusted to reflect more risk in this distressed industry.

Formula - Cost of Capital Adjusted for Flotation Costs

$$\frac{k_u}{1 - f}$$

Where k_u = The cost of capital unadjusted for flotation costs

f = Flotation cost as a percentage of the value of securities issued

**2003 Capitalization Rate Study
Interexchange Telephone Companies
Summary of Rates of Return**

Common Equity		Bonds		
V-L Rating	Rate of Return ¹	Moody's Bond Yield	Moody's Rating	Rate of Return ²
B+	13.50%	Aa=6.91	Aa2	6.91%
B, Major Co.'s	13.50%		Aa3	6.98%
C+	14.50%		A1	7.04%
C	14.50%	A=7.11	A2	7.11%
Not Rated	15.50%		A3	7.27%
Other IEX Carriers	17.50%		Ba1	7.32%
Other IEX Resellers	20.50%		Baa1	7.42%
		Baa=7.58	Baa2	7.58%
			Baa3	7.74%
			B3	8.21%
			Not Rated	Note

¹ The Rate of Return on Common Equity was developed by staff based on the relative risk of the utilities in conjunction with the results of the Capital Asset Pricing Models.

² Rates of Return on Bonds were based on Moody's and "Utility Bond Yields" as taken from the December 31, 2002 News Reports. However, because Moody's assigns a yield only to the groups Aa, A and Baa for bonds, staff interpolates the difference between these groups in order to achieve a further refinement of the ratings.

Note: For companies whose bonds are not rated, staff judgement is used in assigning the rates of return because the circumstances or reasons for not rating the bonds or preferred stocks are different for each company.

2003 Capitalization Rate Study
Interexchange Telephone Companies
Summary of Rate of Return on Common Equity

	Value Line A, B++, B+, B		
	2003	2002	Change
E/P Ratio-Mean	9.99%	4.22%	5.77%
E/P Ratio-Median	9.99%	2.70%	7.29%
Div Yld + Div Growth-Mean	3.16%	-5.29%	8.45%
Div Yld + Div Growth-Median	3.16%	2.49%	0.67%
Weighted Average - Mean	0.77%	-9.59%	10.36%
Div Yld + Earn.Growth-Mean	11.58%	10.30%	1.28%
Div Yld + Earn.Growth-Median	11.58%	10.64%	0.94%
Weighted Average - Mean	3.39%	11.77%	-8.38%

	Value Line Ratings			
	Major Co, B+, B	C+, C, NR	Other IEX Carriers	Other IEX Resellers
2002	15.00%	17.00%	18.50%	19.50%
CAPM - Ex Ante	13.52%	14.38%	NMF	NMF
CAPM - Ex Post	11.87%	12.57%	NMF	NMF
2003 Valuation Division Recommendation	13.50%	14.50%	17.50%	20.50%

NMF: No meaningful figure

For 2003, Value Line Ratings B+ and B included the two major companies: AT&T Communications, Inc. and Sprint Communicaitons Co. L.P (Major Companies). For 2003, due to similarities in their operating markets, competitive environments, relative size, and industry risk, staff recommends the same equity rate for the Major Companies, which excludes MCIWorldCom in 2003 due to bankruptcy proceedings.

**2003 Capitalization Rate Study
Interexchange Telephone Companies
Equity Rates**

a	b	c	d	e	f	g	h	i	j	k	l	m
Financial Strength Value Line	Company Name	Stock Price 12/31/02	Estimated 2003 EPS	2002 EPS	2002 Dividends	Dividend Est. 2003 Amount	Dividend Yield (g/c)	Estimated Dividend Growth	Estimated Earnings Growth	E/P Ratio (d/c)	DvYld+ DvGrth (h+i)	DvYld+ ErngsGr (h+j)
B+	AT&T Corporation	26.1100	2.60	2.70	0.75	0.75	2.87%	NMF	12.88%	9.96%	2.87%	15.75%
B	Sprint Corp. (FON Grp)	14.4800	1.45	1.35	0.50	0.50	3.45%	Nil	3.95%	10.01%	3.45%	7.40%
C+	Cable & Wireless PLC	2.3300	-0.30	-0.60	0.80	0.11	4.72%	-16.00%	2.33%	-12.88%	-11.28%	7.05%
C+	Qwest Comm. Int'l.	5.0000	-0.30	-0.56	---	---		NMF	12.60%	-6.00%		12.60%
C+	Talk America Holdings	5.6000	0.86	1.41	---	---		N/A		15.36%		
C	Level 3 Comm., Inc.	4.9000	-2.45	-2.58	---	---		Nil	8.09%	-50.00%		8.09%
C	Time Warner Telecom	2.1100	-1.27	-1.36	---	---		N/A	11.12%	-60.19%		11.12%
C	Broadwing, Inc.	3.5200	-0.45	-0.59	---	---		NMF	8.09%	-12.78%		8.09%
C	Pac-West Telecomm, Inc	0.5000	NA	NA	---	---		N/A	11.12%	---		11.12%
C	Primus Telecomm. Grp.	2.0000	-0.23	-0.69	---	---		N/A	11.24%	-11.50%		11.24%
	Mean						3.68%	-16.00%	9.04%	-13.11%	-1.65%	10.27%
	Median						3.45%	-16.00%	11.12%	-11.50%	2.87%	11.12%
	Weighted Average										0.68%	12.02%

Because of the limited number of interexchange companies with preferred stock or paying dividends the Discount Cash Flow model is not considered in the derivation of the 2003 capitalization rate.

Source: Columns a,b,d-m were extracted from the January 3, 2003 Value Line.

Source: Column c was extracted from Yahoo Finance December 31, 2002 closing stock prices.

2003 Capitalization Rate Study
Interexchange Telephone Companies
Capital Asset Pricing Model - Ex Ante

Component	Value Line Rating	
	B+, B ¹	C+, C ¹
	(a)	(b)
Expected Future Return - S & P 500	13.52%	13.52%
Less: Risk Free Return 25 - 30 Year Treasury Bonds ²	4.87%	4.87%
Risk Premium	8.65%	8.65%
Relevered Beta	1.00	1.10
Adjusted Risk Premium	8.65%	9.51%
Risk Free Return 25 - 30 Year Treasury Bonds ²	4.87%	4.87%
Projected Return on Common Equity	13.52%	14.38%

¹ The estimated betas for B+, B, C+, and C rated companies are based on interexchange data from the Beta Analysis page.

² Wall Street Journal dated January 2, 2003.

2003 Capitalization Rate Study
Interexchange Telephone Companies
Capital Asset Pricing Model - Ex Post

Component	Value Line Rating	
	B+, B ¹	C+, C ¹
	(a)	(b)
Total Return, Large Company Stocks ²	12.20%	12.20%
Less: Long Term Government Bonds ²	5.20%	5.20%
Risk Premium	7.00%	7.00%
Relevered Average Beta	1.00	1.10
Adjusted Risk Premium	7.00%	7.70%
Risk Free Return 25 - 30 Year Treasury Bonds ³	4.87%	4.87%
Projected Return on Common Equity	11.87%	12.57%

¹ The estimated betas for B+, B, C+, and C rated companies are based on interexchange data from the Beta Analysis page.

² Ibbotson Associates Study

³ Wall Street Journal dated January 2, 2003.

**2003 Capitalization Rate Study
Interexchange Telephone Companies
Beta Analysis**

a	b	c	d	e	f	g	h	i
Value Line		Value Line's	Zack's	Standard & Poor's	Average	Debt Equity	Unlevered	Wtg Avg Debt/Equity
Rating	Company Name	Beta	Beta	Beta	Beta	Ratio	Beta ¹	Ratio
B+	AT&T Corporation	nmf	1.06	NA	1.06	1.00	0.66	0.72
B	Sprint Corp. (FON Grp)	1.05	0.94	0.91	0.97	0.25	0.84	0.07
	Mean	1.05	1.00	0.91	1.01	0.62	0.75	
	Median	1.05	1.00	0.91	1.01		0.75	
	Weighted				1.03		0.71	0.79
C+	Cable & Wireless PLC	1.30	1.56	1.55	1.47	0.53	1.12	0.08
C+	Qwest Comm. Int'l.	1.75	2.29	1.77	1.94	2.83	0.72	1.66
C+	Talk America Holdings	1.45	N/A	NA	1.45	0.91	0.94	0.00
C	Level 3 Comm., Inc.	1.75	1.64	1.98	1.79	3.08	0.63	0.48
C	Time Warner Telecom	2.30	3.80	----	3.05	4.37	0.84	0.10
C	Broadwing, Inc.	1.55	2.22	2.08	1.95	3.38	0.64	0.21
C	Pac-West Telecomm, Inc.	1.25	N/A	NA	1.25	6.09	0.27	0.01
C	Primus Telecomm. Grp.	1.50	2.36	----	1.93	4.21	0.55	0.05
	Mean	1.61	2.31	1.85	1.85	3.18	0.71	
	Median	1.53	2.26	1.88	1.86		0.68	
	Weighted				1.86		0.76	2.60
	Major Relevered Beta based on 35% Debt Capital Structure					0.94 ²		
	Non-major Relevered Beta based on 40% Debt Capital Structure					1.07 ²		

Formulas:

¹ Unlevered Beta = Beta/[1+(1-t)(D/E)]

² Relevered Beta = Unlevered Beta X [1+(1-t)(D/E)]

Where: D/E is the debt to equity ratio

t is the tax rate (assumed to be 40%)

Source: Columns a,b,c were extracted from the Value Line.

Source: Column d was extracted from Zack's.

Source: Column e was extracted from Standard and Poor's Stock Reports.

**2003 Capitalization Rate Study
Interexchange Telephone Companies
Capital Structure**

a	b	c	d	e	f	g	h	i	j	k	l
Value Line Rating	Bond Rating Moody	Company Name	Common Stock Outstanding	Stock Price 31-Dec-02	(d x e) Mkt Value Equity (\$Millions)	Pfd Stock (\$Millions)	L.T. Debt (\$Millions)	Total Capital (\$Millions)	Common Equity %	Pfd Stock %	L.T. Debt %
B+	Baa2	AT&T Corporation	770,217,000	26.11	20,110.4	0.0	20,165.0	40,275.4	49.932%	0.000%	50.068%
B	Baa3	Sprint Corp. (FON Grp)	892,900,000	14.48	12,929.2	10.0	3,169.0	16,108.2	80.265%	0.062%	19.673%
		Mean							65.098%	0.031%	34.871%
		Median							65.098%	0.031%	34.871%
		Weighted Average							58.598%	0.018%	41.384%
C+	Ba1	Cable & Wireless PLC	2,382,000,000	2.33	5,550.1	0.0	2,945.0	8,495.1	65.333%	0.000%	34.667%
C+	Caa1	Qwest Comm. Int'l.	1,676,700,000	5.00	8,383.5	0.0	23,742.0	32,125.5	26.096%	0.000%	73.904%
C+	NR	Talk America Holdings	27,264,911	5.60	152.7	0.0	139.6	292.3	52.238%	0.000%	47.762%
C	Caa3	Level 3 Comm., Inc.	422,689,028	4.90	2,071.2	0.0	6,385.0	8,456.2	24.493%	0.000%	75.507%
C	B3	Time Warner Telecom	114,827,429	2.11	242.3	0.0	1,058.3	1,300.6	18.629%	0.000%	81.371%
C	NR	Broadwing, Inc.	218,886,063	3.52	770.5	129.4	2,471.0	3,370.9	22.857%	3.839%	73.304%
C	Caa3	Pac-West Telecomm, Inc	36,398,531	0.50	18.2	0.0	110.8	129.0	14.108%	0.000%	85.892%
C	Caa3	Primus Telecomm. Grp.	64,885,986	2.00	129.8	0.0	546.6	676.4	19.186%	0.000%	80.814%
		Mean							30.368%	0.480%	69.153%
		Median							23.675%	0.000%	74.705%
		Weighted Average							31.576%	0.236%	68.188%

N/R: No rating

Source: Columns a, d, g - l were extracted from the January 3, 2003 Value Line; columns b and c were extracted from the YE Dec. 2002 Moody's Investor Service.
Column e was extracted from the December 31, 2002 Yahoo Finance closing stock prices.

**California State Board of Equalization
Valuation Division
2003 Capitalization Rate Study
Wireless Companies**

SBE No.	Company Name	Rating	Capital Structure		Rates of Return		Basic Cap Rate
			Common Equity	Debt	Common Equity	Debt	
2502	Bay Area Cellular Telephone Comp.	NR-1	70%	30%	13.39%	7.88%	11.74%
2512	Verizon Wireless - San Diego	NR-1	70%	30%	13.39%	7.88%	11.74%
2513	Sacramento Valley Limited Partnership	NR-1	70%	30%	13.39%	7.88%	11.74%
2532	Los Angeles SMSA, Ltd.	NR-1	70%	30%	13.39%	7.88%	11.74%
2547	AB Cellular Holding, LLC	NR-1	70%	30%	13.39%	7.88%	11.74%
2559	GTE Mobilnet of California, Ltd. Pts.	NR-1	70%	30%	13.39%	7.88%	11.74%
2606	AT&T Wireless Services of CA, Inc.	NR-1	70%	30%	13.39%	7.88%	11.74%
2720	Cox Communications PCS, L.P.	NR-2	65%	35%	14.14%	8.14%	12.04%
2722	Sprint Spectrum L.P.	NR-2	65%	35%	14.14%	8.14%	12.04%
2737	Nextel of California, Inc.	NR-2	65%	35%	14.14%	8.14%	12.04%
2748	Pacific Bell Wireless LLC	NR-2	65%	35%	14.14%	8.14%	12.04%
2749	AT&T Wireless PCS, LLC	NR-2	65%	35%	14.14%	8.14%	12.04%
2755	Cingular-Southwestern Bell Mobile Svcs.	NR-2	65%	35%	14.14%	8.14%	12.04%
2756	Cingular Wireless, LLC	NR-2	65%	35%	14.14%	8.14%	12.04%
2552	Fresno MSA Limited Partnership	NR-3	60%	40%	14.75%	8.39%	12.21%
2611	Cagal Cellular Communications Corp.	NR-3	60%	40%	14.75%	8.39%	12.21%
2622	Bakersfield Cellular Telephone Comp.	NR-3	60%	40%	14.75%	8.39%	12.21%
2626	Santa Barbara Cellular Systems, Ltd.	NR-3	60%	40%	14.75%	8.39%	12.21%
2627	GTE Mobilnet of Santa Barbara, L.P.	NR-3	60%	40%	14.75%	8.39%	12.21%
2628	Napa Cellular Telephone Comp.	NR-3	60%	40%	14.75%	8.39%	12.21%
2630	Santa Cruz Cellular Telephone Comp.	NR-3	60%	40%	14.75%	8.39%	12.21%
2637	Salinas Cellular Telephone Comp.	NR-3	60%	40%	14.75%	8.39%	12.21%
2641	Visalia Cellular Telephone Comp.	NR-3	60%	40%	14.75%	8.39%	12.21%
	Other Wireless Companies	NR-4	60%	40%	17.25%	8.65%	13.81%
	Wireless Reseller Companies	NR-5	60%	40%	20.25%	9.66%	16.02%

NR-1: Companies representing large size wireless markets in California
NR-2: Companies representing predominantly large to midsize PCS markets in California
NR-3: Companies representing predominantly midsize wireless markets in California
NR-4: Other wireless carriers (including Radio Telephones)
NR-5: All wireless reseller companies

**2003 Capitalization Rate Study
Wireless Companies
Industry Notes**

- Staff relied on the following models in forecasting equity rates.
 1. Capital Asset Pricing Model – consideration was given to both the ex post and ex ante risk premium.
 2. Consideration was given to size premiums in assigning equity rates to the smaller wireless companies.
 3. The Discounted Cash Flow (DCF) model was not relied upon because a majority of the companies in the study are not currently paying dividends. In addition, the earnings growth projections may not be sustainable.
- The following company was omitted from the 2003 Capitalization Rate Study:
 1. Dobson Communication was eliminated from the sample due to a lack of sufficient financial information.
- The basic capitalization rates were assigned to companies based on the size and ranking of their operating markets in California.

**2003 Capitalization Rate Study
Wireless Companies
Flotation Cost Adjustment**

Equity				Bond			
Rating	Recommended Rate	Flotation Cost in %	Adjusted Rate	Moody's Rating	Recommended Rate ²	Flotation Cost in %	Adjusted Rate
NR-1	Note ¹		13.39%	Not Rated	7.75%	1.70%	7.88%
NR-2	13.50%	4.50%	14.14%	Not Rated	8.00%	1.70%	8.14%
NR-3	Note ¹		14.75%	Not Rated	8.25%	1.70%	8.39%
NR-4	Note ¹		17.25%	Not Rated	8.50%	1.70%	8.65%
NR-5	Note ¹		20.25%	Not Rated	9.50%	1.70%	9.66%

¹ Staff relied upon the Ex Post and Ex Ante Capital Asset Pricing Model (CAPM) estimating the recommended equity rates for NR-2 categories. Equity rates for the other non-rated categories (NR-1, NR-3, NR-4, NR-5) were extrapolated based on analyzing the relative risks of operating a wireless system within these categories.

² Staff reviewed bonds issued by a major wireless company with a presence in the major markets which revealed a bond rating of Baa3. Based on this, staff concludes that a reasonable debt rate is 7.75%, with an increase in the rates for the smaller market categories.

Formula - Cost of Capital Adjusted for Flotation Costs

$$\frac{k_u}{1 - f}$$

Where k_u = The cost of capital unadjusted for flotation costs

f = Flotation cost as a percentage of the value of securities issued

2003 Capitalization Rate Study
Wireless Companies
Capital Asset Pricing Model - Ex Ante

Component	Industry Computation
Expected Future Return, S&P 500 ¹	13.52%
Less: Risk Free Return 25 - 30 Year Treasury Bonds ²	<u>4.87%</u>
Ex-Ante Risk Premium	8.65%
Beta ³	<u>1.10</u>
Adjusted Risk Premium	9.51%
Risk Free Return 25 - 30 Year Treasury Bonds ²	<u>4.87%</u>
Projected Return on Common Equity	<u><u>14.38%</u></u>

Note: Staff relied upon the The Capital Asset Pricing Model in estimating the recommended equity rate.

¹ Expected Future Return , S&P 500
Dividend Yield for S&P 500 - 12/31/02
5 Year Projected Growth - First Call

1.81%
<u>11.71%</u>
<u><u>13.52%</u></u>

² From the Wall Street Journal 12/31/02 data

³ Based on considering an average and weighted average relevered beta.

2003 Capitalization Rate Study
Wireless Companies
Capital Asset Pricing Model - Ex Post

Component	Industry Computation
Common Stock Return (1926-2002) ¹	12.20%
Less: Income Return, L/T Government Bonds (1926-2002) ¹	<u>5.20%</u>
	.
Ex-Post Risk Premium	7.00%
Beta ²	<u>1.10</u>
Adjusted Risk Premium	7.70%
Risk Free Return 25 - 30 Year Treasury Bonds ³	<u>4.87%</u>
Projected Return on Common Equity	<u><u>12.57%</u></u>

Note: Staff relied upon the The Capital Asset Pricing Model in estimating the recommended equity rate.

¹ Ibbotson Associates, Inc. Study

² Based on considering an average and weighted average relevered beta.

³ Wall Street Journal 12/31/02 data

2003 Capitalization Rate Study
Wireless Companies
Equity Rates

a	b	c	d	e	f	g	h	i	j	k	l
Value Line		Stock	2002	2002	2003	2003	2003	2003	E/P	Div Yld+	DvYld+
Rating	Company Name	Price	Earnings	Dividends	Estimated	Div Yield	Est. Div	Avg. Erngs	Ratio	DvGwth	ErnsGwth
		12/31/02			Dividends	(f/c)	Growth	Growth	(d/c)	(g+h)	(g+i)
A	Alltel Corp.	51.00	2.95	1.37	1.41	2.76%	3.00%	8.90%	5.78%	5.76%	11.66%
B	AT&T Wireless Group	5.65	0.00	0.00	NMF			21.20%			21.20%
B++	CenturyTel Inc	29.38	2.20	0.21	0.24	0.82%	11.00%	12.11%	7.49%	11.82%	12.93%
B	Telephone & Data Systems ¹	47.02	2.80	0.54	0.62	1.32%	4.50%	10.72%	5.95%	5.82%	12.04%
B	US Cellular	25.02	1.80	0.00	NMF			12.85%	7.19%		12.85%
C	Western Wireless	5.30	2.00	0.00	NMF			15.19%	37.74%		15.19%
C+	Nextel Communications	11.55	0.10	0.00	NMF			19.63%	0.87%		19.63%
C+	Sprint PCS Group	4.38	0.65	0.00	NMF			24.71%	14.84%		24.71%
Mean							6.17%	15.66%	11.41%	7.80%	16.28%
Median							4.50%	14.02%	7.19%	5.82%	14.06%
Weighted Average											18.40%

¹Parent company of US Cellular.

Note: The range of rates based on dividend yield plus earnings growth indicates rates from 11.66% to 24.71%.
The DCF model was not weighted or relied upon because a majority of the companies available for inclusion in the study were not paying dividends. In addition, the reported earnings growth rates may not be sustainable.

Sources: Columns a, b, d, e, f, g and h were extracted from Value Line.
Columns c was obtained from the Yahoo Historical Quote Market Guide.
Column i is an average of Value Line, Zacks, and Thomson.

2003 Capitalization Rate Study
Wireless Companies
Long-Term Earnings Growth

a	b	c	d	e	f
Value Line Rating	Company Name	Value Line	Zacks	Thomson	Average
A	Alltel Corp.	10.50%	7.60%	8.60%	8.90%
B	AT&T Wireless Group	NMF	17.74%	24.65%	21.20%
B++	CenturyTel Inc	13.50%	11.62%	11.22%	12.11%
B	Telephone & Data Systems ¹	9.50%	12.03%	10.62%	10.72%
B	US Cellular	11.00%	14.45%	13.10%	12.85%
C	Western Wireless	NMF	11.00%	19.38%	15.19%
C+	Nextel Communications	NMF	21.40%	17.86%	19.63%
C+	Sprint PCS Group	NMF	24.63%	24.78%	24.71%
	Mean	11.13%	15.06%	16.28%	15.66%
	Median	10.75%	13.24%	15.48%	14.02%
	Weighted Average				17.76%

Note: The DCF model was not weighted or relied upon because a majority of the companies available for inclusion in the study were not paying dividends. In addition, this growth may not be sustainable over a long period of time.

**2003 Capitalization Rate Study
Wireless Companies
Beta Analysis**

a	b	c	d	e	f	g	h	i
Value Line Rating	Company Name	Value Line Beta	Zacks Beta	Standard & Poors Beta	Average Beta	Debt Equity Ratio	Unlevered Beta ¹	WTG Avg Debt/Equity Ratio
A	Alltel Corp.	0.90	0.64	0.64	0.73	0.40	0.59	0.08
B	AT&T Wireless	1.35	n/a	n/a	1.35	0.73	0.94	0.17
B++	CenturyTel Inc	1.05	0.88	0.88	0.94	0.87	0.61	0.06
C+	Sprint PCS Group	1.60	2.95	n/a	2.28	4.06	0.66	0.80
B	Telephone & Data Systems	0.95	1.13	1.13	1.07	0.87	0.70	0.04
B	US Cellular	1.00	1.12	1.12	1.08	0.39	0.87	0.01
C	Western Wireless	1.20	1.20	n/a	1.20	5.50	0.28	0.13
C+	Nextel Communications	1.80	1.90	1.91	1.87	1.32	1.04	0.29
Mean		1.23	1.40	1.14	1.31	1.77	0.71	
Median		1.13	1.13	1.12	1.14		0.68	
Weighted					1.48		0.79	1.58
Relevered Beta using an average Beta and based on Debt Capital structure of: ²				30%	40%			
				0.90	1.00			
Relevered Beta using a weighted-average Beta and based on Debt Capital structure of: ²				0.99	1.11			

Formulas:

¹ Unlevered Beta = $\text{Beta} / [1 + (1 - t)(D/E)]$

² Relevered Beta = Unlevered Beta X $[1 + (1 - t)(D/E)]$

Where: D/E is the debt to equity ratio

t is the tax rate (assumed to be 40%)

Note: These companies when taken as a group are assumed to approximate a "B" group ranking.

2003 Capitalization Rate Study
Wireless Companies
Debt Rate

Debt Rate - 7.75% for Major Markets

There was no known debt issuance close to the lien date from any pure wireless operator. However, a review of long-term bond yields as of the lien date for major wireless companies with a presence in the major markets revealed yields ranging from 7.28% to 7.84%, with a bond rating of Baa3. Based on this, staff feels that a reasonable debt rate for similar companies should be 7.75%, with an increase in the rates for midsize and smaller companies.

Other Debt Rates Considered

Moody's Utility Bond Yield Average - 12/31/02 ¹	7.20%
Moody's Utility Bond Yield (Baa) - 12/31/02 ¹	7.58%
Standard & Poor's Bond Yield Index (BBB) - Dec 2002 Average ²	7.30%
Moody's Public Utility Bonds (Baa) - Dec 2002 Average ³	7.61%

¹ Obtained from Moodys.com Internet source as of 1/02/03.

² Obtained from Standard & Poor's 2002 Bond Guide.

³ Obtained from Moody's Mergent Bond Record January 2003.

2003 Capitalization Rate Study
Wireless Companies
Capital Structure

a	b	c	d	e	f	g	h	i	j	k
Value Line Rating	Company Name	Common Equity			Preferred Stock (\$Millions)	Long-Term Debt (\$Millions)	Total Capital (\$Millions) (e+f+g)	Ratios		
		Shares (Millions)	Market Value (\$Per Share)	Total (\$Millions) (c*d)				Common Equity (e/h)	Preferred Stock (f/h)	Long-Term Debt (g/h)
A	Alltel Corp.	311.03	51.00	15,862.60	0.41	6,391.40	22,254.41	71.28%	0.00%	28.72%
B	AT&T Wireless Group	2,709.05	5.65	15,306.14	146.00	11,033.00	26,485.14	57.79%	0.55%	41.66%
B++	CenturyTel Inc	142.61	29.38	4,189.82	8.00	3,650.00	7,847.82	53.39%	0.10%	46.51%
B	Telephone & Data Systems ¹	58.68	47.02	2,758.98	9.00	2,379.90	5,147.88	53.59%	0.17%	46.23%
B	US Cellular	86.11	25.02	2,154.57	-	849.30	3,003.87	71.73%	0.00%	28.27%
Totals							64,739.11			
Mean								61.56%	0.17%	38.28%
Median								57.79%	0.10%	41.66%
Weighted Average								62.21%	0.25%	37.54%
C	Western Wireless	79.00	5.30	418.72	-	2,302.00	2,720.72	15.39%	0.00%	84.61%
C+	Nextel Communications	963.12	11.55	11,124.00	1,541.00	13,104.00	25,769.00	43.17%	5.98%	50.85%
C+	Sprint PCS Group	1,042.20	4.38	4,564.85	526.00	17,989.00	23,079.85	19.78%	2.28%	77.94%
Totals							51,569.58			
Mean								26.11%	2.75%	71.13%
Median								19.78%	2.28%	77.94%
Weighted Average								31.23%	4.01%	64.76%

¹Parent company of US Cellular.

Sources: Columns a,c,f,g and h were extracted from Value Line dated January 3, 2003.

Column d (stock price) was extracted from the Yahoo Finance Historic Quotes as of Dec. 31, 2002.

2003 Capitalization Rate Study
Wireless Companies
Comparison of Wireless Companies for Lien Dates 2002 and 2003

Rating	2002					2003					Differences				
	Common Equity Rate	Capital Structure %	Debt Rate	Capital Structure %	Basic Cap Rate	Common Equity Rate	Capital Structure %	Debt Rate	Capital Structure %	Basic Cap Rate	Common Equity Rate	Capital Structure %	Debt Rate	Capital Structure %	Basic Cap Rate
NR-1	14.50%	80%	8.24%	20%	13.25%	13.39%	70%	7.88%	30%	11.74%	-1.11%	-10%	-0.36%	10%	-1.51%
NR-2	15.25%	75%	8.39%	25%	13.54%	14.14%	65%	8.14%	35%	12.04%	-1.11%	-10%	-0.25%	10%	-1.50%
NR-3	15.71%	70%	8.65%	30%	13.59%	14.75%	60%	8.39%	40%	12.21%	-0.96%	-10%	-0.26%	10%	-1.38%
NR-4	19.00%	65%	8.90%	35%	15.47%	17.25%	60%	8.65%	40%	13.81%	-1.75%	-5%	-0.25%	5%	-1.66%
NR-5	22.00%	65%	9.92%	35%	17.77%	20.25%	60%	9.66%	40%	16.02%	-1.75%	-5%	-0.26%	5%	-1.75%

**California State Board of Equalization
Valuation Division
2003 Capitalization Rate Study
Pipeline Companies**

SBE No.	Company Name	Ratings		Capital Structure		Rates of Return		Basic Cap Rate
		Common Equity	Bond	Common Equity	Debt	Equity	Debt	
461	SFPP, L.P.	B+	Baa	65%	35%	15.11% (1)	7.57%	12.47%
402	CALNEV Pipe Line Company	NR-1	NR-b	65%	35%	13.61%	7.57%	11.50%
465	All American Pipeline, L.P.	NR-2	NR-b	65%	35%	14.14%	7.57%	11.84%
479	Chevron Pipeline Company	NR-2	NR-b	65%	35%	14.14%	7.57%	11.84%
468	Equilon California Pipeline Company LLC	NR-2	NR-b	65%	35%	14.14%	7.57%	11.84%
486	Pacific Pipeline System, LLP	NR-2	NR-b	65%	35%	14.14%	7.57%	11.84%
480	Unocap	NR-2	NR-b	65%	35%	14.14%	7.57%	11.84%
	Other Pipeline Companies	NR-3	NR-c	65%	35%	15.18%	8.59%	12.87%

(1) Includes additional 150 basis points to reflect potential risk from ongoing tariff litigation for this company.

**2003 Capitalization Rate Study
Pipeline Companies
Industry Notes**

- Staff relied upon the results of the following models in forecasting equity rates:
 1. Discounted Cash Flow analysis
 2. Capital Asset Pricing Model - Consideration was given to both the ex post and ex ante risk premiums.
- In assigning equity rates to smaller pipeline companies, the size premium information from Ibbotson and Associates was considered.

**2003 Capitalization Rate Study
Pipeline Companies
Flotation Cost Adjustment**

Equity				Debt			
Value Line Rating	Recommended Rate	Flotation Cost in %	Adjusted Rate	Moody's Rating	Recommended Rate	Flotation Cost in %	Adjusted Rate
B+	13.00%	4.50%	13.61%	Baa	7.44%	1.70%	7.57%
NR-1	13.00%	4.50%	13.61%	NR-b	7.44%	1.70%	7.57%
NR-2	13.50%	4.50%	14.14%	NR-c	8.44%	1.70%	8.59%
NR-3	14.50%	4.50%	15.18%				

Formula - Cost of Capital Adjusted for Flotation Costs

$$\frac{k_u}{1 - f}$$

Where k_u = The cost of capital unadjusted for flotation costs

f = Flotation cost as a percentage of the value of securities issued

NR-1: Not-Rated-1 pipelines are not directly traded because they are subsidiaries of larger companies. These are larger common carrier pipelines transmitting refined petroleum products.

NR-2: Not-Rated-2 pipelines are not directly traded because they are subsidiaries of larger companies. These are larger common carrier pipelines transmitting crude oil.

NR-3: Not-Rated-3 pipelines are smaller companies transporting petroleum products or crude oil.

NR-b: Although these companies do not have rated debt securities, the rating class "Baa" was chosen to represent these subsidiaries of larger corporations.

NR-c: Issues of this size are not normally rated. An additional increment of 100 basis points (before flotation costs) has been added to the "Baa" rate.

2003 Capitalization Rate Study
Pipeline Companies
Summary of Return on Common Equity

Description	2003	2002	Change
E/P Ratio - Mean	6.49%	5.50%	0.99%
E/P Ratio - Median	6.67%	6.27%	0.40%
Dividend Yield + Dividend Growth - Mean	14.79%	13.67%	1.12%
Dividend Yield + Dividend Growth - Median	15.04%	12.67%	2.37%
Dividend Yield + Earnings Growth - Mean	14.82%	14.52%	0.30%
Dividend Yield + Earnings Growth - Median	14.28%	13.78%	0.50%
Capital Asset Pricing Model (CAPM) - Ex Ante	8.07%	8.60%	-0.53%
Capital Asset Pricing Model (CAPM) - Ex Post	7.46%	8.32%	-0.86%

2003 recommended equity rates:

13.00% for Common Carrier product lines

13.50% for Common Carrier crude oil lines

14.50% for all other pipelines

2003 Capitalization Rate Study
Pipeline Companies
Equity Rates

a	b	c	d	e	f	g	h	i	j	k	l
Value Line		Stock				2003	2003	2003	E/P	Div Yld+	Div Yld+
Rating	Company Name	Price	2002	2002	2003	Dividend	Hist. Div	Avg. Erns	Ratio	Div Gwth	Erns Gwth
		01/01/03	Earnings	Dividends	Est Div	Yield	Growth	Growth	(d/c)	(g+h)	(g+i)
B+	Buckeye Partners, L.P.	38.4000	2.65	2.50	2.60	6.77%	3.00%	6.78%	6.90%	9.77%	13.55%
B++	Enbridge Energy	42.1500	1.83	3.50	3.60	8.54%	6.50%	2.26%	4.34%	15.04%	10.80%
B++	Kaneb Pipe Line Partners	34.8500	3.13	2.90	3.12	8.95%	5.00%	5.32%	8.98%	13.95%	14.28%
B+	Kinder Morgan Energy Partners, L.P.	35.0000	1.95	2.36	2.58	7.37%	12.50%	11.97%	5.57%	19.87%	19.34%
B	TEPPCO Partners, L.P.	27.7500	1.85	2.35	2.45	8.83%	6.50%	7.28%	6.67%	15.33%	16.11%
		Mean					6.70%	6.72%	6.49%	14.79%	14.82%
		Median					6.50%	6.78%	6.67%	15.04%	14.28%
		Weighted Average									16.89%

Columns a, d, e, f, and h were extracted from Value Line.

Column c was extracted from the Yahoo Market Guide.

Column i is an average of Value Line, Zacks, and Thomson.

**2003 Capitalization Rate Study
Pipeline Companies
Long Term Earnings Growth**

a	b	c	d	e	f
Value Line Rating	Company Name	Value Line	Zacks	Thomson	Average
B+	Buckeye Partners, L.P.	6.50%	7.33%	6.50%	6.78%
B++	Enbridge Energy	-6.50%	6.07%	7.22%	2.26%
B++	Kaneb Pipe Line Partners	4.50%	5.67%	5.80%	5.32%
B+	Kinder Morgan Energy Partners, L.P.	12.50%	11.10%	12.32%	11.97%
B	TEPPCO Partners, L.P.	6.00%	8.00%	7.85%	7.28%
	Mean	4.60%	7.63%	7.94%	6.72%
	Median	6.00%	7.33%	7.22%	6.78%
	Weighted Average				9.06%

2003 Capitalization Rate Study
Pipeline Companies
Capital Asset Pricing Model - Ex Ante

Component	Industry Computation
Expected Future Return, S&P 500	13.52%
Less: Risk Free Return 25 - 30 Year Treasury Bonds ¹	4.87%
Risk Premium	8.65%
Beta ²	0.37
Adjusted Risk Premium	3.20%
Risk Free Return 25 - 30 Year Treasury Bonds ¹	4.87%
Projected Return on Common Equity	8.07%

¹ Wall Street Journal 12/31/2002 data

² Weighted average using betas from Value Line, Zacks, and Standard & Poor for a representative sample of gas transmission companies.

2003 Capitalization Rate Study
Pipeline Companies
Capital Asset Pricing Model - Ex Post

Component	Industry Computation
Common Stock Return (1926 - 2002) ¹	12.20%
Less: Long Term Government Bonds ¹	5.20%
Risk Premium	7.00%
Beta ²	0.37
Adj. Risk Premium	2.59%
Risk Free Return 25 - 30 Year Treasury Bonds ³	4.87%
Projected Return on Common Equity	7.46%

¹ Ibbotson Associates Study

² Weighted average using betas from Value Line, Zacks, and Standard & Poor for a representative sample of gas transmission companies.

³ Wall Street Journal 12/31/2002 data

**2003 Capitalization Rate Study
Pipeline Companies
Beta Analysis**

a	b	c	d	e	f	g	h	i
Value Line Rating	Company Name	Value Line Beta	Zack Beta	Standard & Poor's Beta	Average Beta	Debt Equity Ratio	Unlevered Beta ¹	WTG Avg Debt/Equity Ratio
B+	Buckeye Partners, L.P.	0.60	0.15	N/A	0.38	0.39	0.30	0.06
B++	Kanab Pipe Line Partners	0.55	0.12	N/A	0.34	0.59	0.25	0.05
B+	Kinder Morgan Energy Partners, L.P.	0.70	0.39	0.38	0.49	0.57	0.36	0.05
B	TEPPCO Partners, L.P.	0.65	0.22	0.21	0.36	1.04	0.22	0.69
	Mean	0.63	0.22	0.30	0.39	0.65	0.28	
	Median	0.63	0.19	0.30	0.37		0.28	
	Weighted				0.37		0.25	0.86

Relevered beta based on 30% Debt Capital Structure 0.36 ²
Relevered beta based on 30% Debt Capital Structure and a weighted average beta 0.31 ²

Formulas:

¹ Unlevered beta = beta/[1+(1-t)(D/E)]

² Relevered beta = Unlevered beta X [1+(1-t)(D/E)]

Where: D/E is the debt to equity ratio

t is the tax rate (assumed to be 40%)

Enbridge Energy was removed because no meaningful beta information was available from Zacks and Standard and Poors.

**2003 Capitalization Rate Study
Pipeline Companies
Capital Structure**

a	b	c	d	e	f	g	h	i	j	k	l
Value Line Rating	Moody Bond Rating	Company Name	Partnership Units Outstanding (000)	Unit Price 12/31/02	Market Value Equity (000)	Market Value Preferred (000)	Long Term Debt (000)	Total Capital (000)	Long Term Debt %	Preferred %	Equity %
B+	N/R	Buckeye Partners, L.P.	27,179	38.4000	1,043,677	0	407,000	1,450,677	28.06%	0.00%	71.94%
B++	N/R	Enbridge Energy	35,226	42.1500	1,484,789	0	763,400	2,248,189	33.96%	0.00%	66.04%
B++	N/R	Kaneb Pipe Line Partners	25,100	34.8500	874,735	0	518,400	1,393,135	37.21%	0.00%	62.79%
B+	N/R	Kinder Morgan Energy Partners, L.P.	179,966	35.0000	6,298,803	0	3,611,000	9,909,803	36.44%	0.00%	63.56%
B	N/R	TEPPCO Partners, L.P.	50,015	27.7500	1,387,902	0	1,449,500	2,837,402	51.09%	0.00%	48.91%
		Total			11,089,906	0	6,749,300	17,839,206			
		Mean							37.35%	0.00%	62.65%
		Median							36.44%	0.00%	63.56%
		Weighted Average							37.83%	0.00%	62.17%

Recommended Capital Structure for Common Carrier Pipelines for Lien Date 01/01/03

Debt -	35%
Equity -	65%

Source:

Columns a, d, g, and h were extracted from Value Line.

Column b was extracted from the 2002 Moody's Public Utility and Industrial Manuals.

Column e was extracted from the Yahoo Market Guide.

2003 Capitalization Rate Study
Pipeline Companies
Debt Yield Rate

Average of Industrial and Public Utility Bond Yield:

Aa	Industrial/Utility Average	6.630%	
A	Industrial/Utility Average	6.815%	
		6.630%	Aa
		6.815%	A
Baa	Industrial/Utility Average	7.440%	
	Recommended	7.440%	Baa/Ba

	Bond Rating	Industrial	Public Utility	2002 Average
	Aaa	6.230%	N/A	6.230%
	Aa	6.350%	6.910%	6.630%
	A	6.520%	7.110%	6.815%
	Baa	7.300%	7.580%	7.440%

2003 Capitalization Rate Study
Pipeline Companies
Size Premium

Decile of the New York Stock Exchange	Equity Market Capitalization (in thousands)		Size Premium (Return in excess of CAPM)
1	over	9,835,796	-0.28
2	4,199,948 to	9,835,796	0.18
3	2,266,156 to	4,199,948	0.25
4	1,396,666 to	2,266,156	0.57
5	918,323 to	1,396,666	1.09
6	632,639 to	918,323	0.99
7	416,435 to	632,639	0.98
8	252,109 to	416,435	1.72
9	123,872 to	252,109	1.96
10	under	123,872	4.35

Source: SBBI: Valuation Edition 1999 Yearbook
Tables 4-2 and 4-5

California State Board of Equalization
Valuation Division
2003 Capitalization Rate Study
Railroads

SBE No.	Company Name	Ratings			Capital Structure			Rates of Return			Basic Cap Rate
		Common Equity	ETC's	Bond	Common Equity	ETC's	Debt	Common Equity	ETC's	Debt	
804	Burlington Northern Santa Fe Railroad Co.	B+	A2	Baa2	66%	10%	24%	14.39%	5.18%	7.57%	11.83%
843	Union Pacific Railroad Company	B+	A2	Baa3	66%	10%	24%	14.39%	5.18%	7.78%	11.88%
802	Central Oregon and Pacific Railroad	N/R-1		N/R-1	60%		40%	16.49%		9.09%	13.53%
810	California Northern Railroad	N/R-1		N/R-1	60%		40%	16.49%		9.09%	13.53%
813	Pacific Harbor Lines	N/R-1		N/R-1	60%		40%	16.49%		9.09%	13.53%
850	Modesto and Empire Traction Company	N/R-1		N/R-1	60%		40%	16.49%		9.09%	13.53%
865	San Diego & Imperial Valley Railroad Co. Inc.	N/R-1		N/R-1	60%		40%	16.49%		9.09%	13.53%
882	Trona Railway Co.	N/R-1		N/R-1	60%		40%	16.49%		9.09%	13.53%
897	San Joaquin Valley Railroad Company	N/R-1		N/R-1	60%		40%	16.49%		9.09%	13.53%
899	Arizona & California Railroad	N/R-1		N/R-1	60%		40%	16.49%		9.09%	13.53%
	Other Railroad Companies	N/R-2		N/R-2	60%		40%	16.75%		10.11%	14.09%

**2003 Capitalization Rate Study
Railroad Companies
Industry Notes**

- Staff relied upon the results of the following models in forecasting equity rates:
 1. Discounted Cash Flow analysis
 2. Capital Asset Pricing Model - Consideration was given to both the ex post and ex ante risk premiums
- The Value Line reported beta was used because Zack's and Standard & Poor's betas appear to be unreliable as these unadjusted statistics are skewed due to the effect on stock prices on railroad merger activity over the past five years.

**2003 Capitalization Rate Study
Railroad Companies
Flotation Cost Adjustment**

Equity				Debt			
Value Line Rating	Recommended Rate	Flotation Cost In %	Adjusted Rate	Moody's Rating	Recommended Rate	Flotation Cost In %	Adjusted Rate
B+	13.74%	4.50%	14.39%	A2 ETC ¹	5.09%	1.70%	5.18%
N/R-1	15.74%	4.50%	16.49%	Baa2	7.44%	1.70%	7.57%
N/R-2	15.99%	4.50%	16.75%	Baa3 ²	7.65%	1.70%	7.78%
				N/R-1	8.94%	1.70%	9.09%
				N/R-2	9.94%	1.70%	10.11%

Formula - Cost of Capital Adjusted for Flotation Costs

$$\frac{k_u}{1 - f}$$

Where k_u = The cost of capital unadjusted for flotation costs

f = Flotation cost as a percentage of the value of securities issued

¹ A2 ETC rate is based on the average of utility and industrial A2 unsecured debt.

² Baa3 rate was interpolated by applying the difference between the average of Moody's Baa1 and Baa2 to estimate the Baa3 rate.

N/R-1: Represent short line railroad companies with stable historical income. An additional 150 basis points were added to the Baa2 Bond rate to represent the additional risk premium.

N/R-2: Represent short line railroad companies without stable historical income patterns. An additional 250 basis points were added to the Baa2 Bond rate to represent the additional risk premium.

**2003 Capitalization Rate Study
Railroad Companies
Equity Rates 2003 vs. 2002**

Description	2003	2002	Change
E/P Ratio - Mean	7.94%	6.89%	1.05%
E/P Ratio - Median	8.14%	6.97%	1.17%
Dividend Yield + Dividend Growth - Mean	-0.48%	1.56%	-2.04%
Dividend Yield + Dividend Growth - Median	1.17%	1.27%	-0.10%
Dividend Yield + Earnings Growth - Mean	13.98%	13.23%	0.75%
Dividend Yield + Earnings Growth - Median	14.89%	14.26%	0.63%
Capital Asset Pricing Model - Ex post	11.87%	13.19%	-1.32%
Capital Asset Pricing Model - Ex ante	13.52%	13.99%	-0.47%

2003 Capitalization Rate Study
Railroad Companies
Equity Rates

a	b	c	d	e	f	g	h	i	j	k	l	m
Value Line Rating	Company Name	Stock Price 12/31/02	Est Erns Value Line 2003	2002 Earnings	2002 Dividends	2003 Est Div	2003 Dividend Yield	Value Line Dividend Est Gwth	Avg Est Erns Gwth	E/P Ratio (d/c)	Div Yld+ DvGwth (h+i)	DvYld+ ErnsGwth (h+j)
Class 1 Railroads:												
B	Norfolk Southern Corp	19.99	1.40	1.15	0.26	0.28	1.40%	-12.50%	15.10%	7.00%	N/A	16.50%
B+	Burlington Northern	26.01	2.15	1.99	0.48	0.48	1.85%	0.50%	7.79%	8.27%	2.35%	9.64%
B++	CSX	28.31	2.40	2.05	0.40	0.48	1.70%	-10.00%	14.45%	8.48%	-8.30%	16.15%
B+	Union Pacific	59.87	4.80	4.63	0.80	0.92	1.54%	2.50%	12.10%	8.02%	4.04%	13.64%
				Mean			1.62%	-4.88%	12.36%	7.94%	-0.48%	13.98%
				Median			1.62%	-4.75%	13.28%	8.14%	1.17%	14.89%
				Weighted Average							0.49%	13.74%

**2003 Capitalization Rate Study
Railroad Companies
Long Term Earnings Growth**

a	b	c	d	e	f
Value Line Rating	Company Name	Value Line	Zacks	Thomson	Average
Class 1 Railroads:					
B	Norfolk Southern Corp	19.00%	13.64%	12.67%	15.10%
B+	Burlington Northern	4.50%	10.00%	8.88%	7.79%
B++	CSX	18.00%	12.36%	13.00%	14.45%
B+	Union Pacific	10.00%	15.00%	11.31%	12.10%
	Mean	12.88%	12.75%	11.47%	12.36%
	Median	14.00%	13.00%	11.99%	13.28%
	Weighted Average				12.13%

2003 Capitalization Rate Study
Railroad Companies
Capital Asset Pricing Model - Ex Ante

Component	Industry Computation
Expected Future Return, S&P 500	13.52%
Less: Risk Free Return 25 - 30 Year Treasury Bonds ¹	4.87%
Risk Premium	8.65%
Beta ²	1.00
Adjusted Risk Premium	8.65%
Risk Free Return 25 - 30 Year Treasury Bonds ¹	4.87%
Projected Return on Common Equity	13.52%

¹ Wall Street Journal 12/31/2002 data

² The beta is derived from Value Line's beta analysis. Value Line's average beta was used because Zack's and Standard & Poor's betas appear to be inconsistent and would not be meaningful.

2003 Capitalization Rate Study
Railroad Companies
Capital Asset Pricing Model - Ex Post

Component	Industry Computation
Common Stock Return (1926 - 2002) ¹	12.20%
Less: Long Term Government Bonds ¹	5.20%
Risk Premium	7.00%
Beta ²	1.00
Adj. Risk Premium	7.00%
Risk Free Return 25 - 30 Year Treasury Bonds ³	4.87%
Projected Return on Common Equity	11.87%

¹ Ibbotson Associates Study

² The beta is derived from Value Line's beta analysis. Value Line's average beta was used and Standard & Poor's betas appear to be inconsistent and would not be meaningful.

³ Wall Street Journal 12/31/2002 data

2003 Capitalization Rate Study
Railroad Companies
Beta Analysis

a	b	c	d	e	f	g	h	i
Value Line Rating	Company Name	Value Line Beta	Zack's Beta	Standard & Poor's Beta	Average Beta	Debt Equity Ratio	Unlevered Beta ¹	WTG Avg Debt/Equity Ratio
Class 1 Railroads:								
B	Norfolk Southern Corp	1.05	0.47	0.48	0.67	0.90	0.43	0.20
B+	Burlington Northern	0.95	0.52	0.52	0.66	0.69	0.47	0.17
B++	CSX	1.05	0.50	0.52	0.69	1.07	0.42	0.20
B+	Union Pacific	0.90	0.39	0.39	0.56	0.60	0.41	0.21
Mean		0.99	0.47	0.48	0.65	0.82	0.43	
Median		1.00	0.49	0.50	0.67		0.43	
Weighted Average					0.63		0.43	0.77
Relevered Beta based on 34% Debt Capital Structure						0.57 ²		
Relevered Beta based on 34% Debt Capital Structure and a weighted average Beta						0.57 ²		
Non-Class 1 Railroads:								
B	Genesee and Wyoming	0.85	0.62	0.61	0.69	0.48	0.54	0.18
B	Rail America	0.75	0.62		0.69	2.36	0.28	1.50
Mean		0.80	0.62	0.61	0.69	1.42	0.41	
Median		0.80	0.62	0.61	0.69		0.41	
Weighted Average					0.69		0.38	1.68
Relevered Beta based on 40% Debt Capital Structure						0.57 ²		
Relevered Beta based on 40% Debt Capital Structure and a weighted average Beta						0.53 ²		

Formulas:

¹ Unlevered Beta = Beta/[1+(1-t)(D/E)]

² Relevered Beta = Unlevered Beta X [1+(1-t)(D/E)]

Where: D/E is the debt to equity ratio

t is the tax rate (assumed to be 40%)

**2003 Capitalization Rate Study
Railroad Companies
Capital Structure**

a	b	c	d	e	f	g	h	i	j	k	l
Value Line Rating	Moody Bond Rating	Company Name	Common Stock Outstanding (000)	Common Stock Price 12/31/02	Market Value Equity (000)	Preferred Stock (000)	Long Term Debt (000)	Total Capital (000)	Long Term Debt %	Preferred Stock %	Common Equity %
Class 1 Railroads:											
B	Baa1	Norfolk Southern Corp	388,647	19.99	7,769,054	0	7,027,000	14,796,054	47.49%	0.00%	52.51%
B+	Baa2	Burlington Northern	377,476	26.01	9,818,151	0	6,802,000	16,620,151	40.93%	0.00%	59.07%
B++	Baa2	CSX	213,030	28.31	6,030,879	0	6,434,000	12,464,879	51.62%	0.00%	48.38%
B+	Baa3	Union Pacific	253,282	59.87	15,163,993	1,500,000	7,580,000	24,243,993	31.27%	6.19%	62.55%
		Total						<u><u>68,125,077</u></u>			
						Mean			42.83%	1.55%	55.63%
						Median			44.21%	0.00%	55.79%
						Weighted Average			40.87%	2.20%	56.93%
Non-Class 1 Railroads:											
B	NR	Genesee and Wyoming	14,751	20.35	300,183	23,900	121,400	445,483	27.25%	5.36%	67.38%
B	NR	Rail America	31,987	7.17	229,347	0	542,100	771,447	70.27%	0.00%	29.73%
		Total						<u><u>1,216,930</u></u>			
						Mean			48.76%	2.68%	48.56%
						Median			48.76%	2.68%	48.56%
						Weighted Average			54.52%	1.96%	43.51%
<hr/>											
Recommended Capital Structures for Lien date 1/1/03 are:				Equity	Debt	Equipment Trust Certificates					
Class 1 Railroads:				66%	24%	10%					
Non-Class 1 Railroads:				60%	40%						

Notes:

Staff believes that the capital structure indicated at the upper end of the equity range of the sample companies would most likely reflect the equity vs. debt expectation of a prospective purchaser in light of the current market conditions facing the railroads.

2003 Capitalization Rate Study
Railroad Companies
Interpolation of Utility Bond and Preferred Stock Yields

Yield Increment from Moody Average Bond Ratings			
a	b	c	d
Moody Average Rating	Moody Average Bond Yield	Number of Increments	Incremental Increase (b/c)

Aa = Aa2	6.63%		
A = A2	<u>6.82%</u>		
Difference	<u><u>0.19%</u></u>	3	0.06%
A = A2	6.82%		
Baa = Baa2	<u>7.44%</u>		
Difference	<u><u>0.62%</u></u>	3	0.21%

Interpolated Railroad Bond Yield			
a	b	c	d
Moody Average Rating	Moody Average Bond Yield	Incremental Increase	Interpolated Bond Yield
Aa2	6.630%		6.63%
Aa3		0.06%	6.69%
A1		0.06%	6.76%
A2	6.820%		6.82%
A3		0.21%	7.03%
Baa1		0.21%	7.23%
Baa2	7.440%		7.44%
Baa3		0.21%	7.65%

**2003 Capitalization Rate Study
Railroad Companies
Debt Yield Rates**

Bond Rating	Industrial	Public Utility	2002 Average
Aaa	6.23%	NA	6.23%
Aa	6.35%	6.91%	6.63%
A	6.52%	7.11%	6.82%
Baa	7.30%	7.58%	7.44%

Equipment Trust Certificates (ETC)	Adjustment Factor	Rate	Recommended
30 year treasury bonds - 12/31/02		4.87%	
BFYA 30 year treasury	5.28%		
BFYA 15 year treasury	4.75%		
15 year treasury adjustment factor		-0.53%	
Adjusted to 15 year treasury bonds		4.34%	
BFYA A2	5.50%		
BFYA 15 year treasury	4.75%		
A2 adjustment factor		0.75%	
Adjusted to A2 ETC rate			5.09%

Note:

The recommended rates for Equipment Trust Certificates were established by adjusting 2002 Boston Financial yearly average rates to lien date.